Vol. 1062 Number 3

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

January 21, 1986

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Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

January 21, 1986 Volume 1062 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *PCT Gazette* on Oct. 24, 1985 and in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before Feb. 9, 1986	750.00
if paid on or after Feb. 9, 1986	830.00
International fees	
Basic fee (first 30 pages):	
if paid before Jan. 1, 1986	280.00
if paid on or after Jan. 1, 1986	325.00
Basic Supplemental fee (for each page over 30):	
if paid before Jan. 1, 1986	6.00
if paid on or after Jan. 1, 1986	6.00
Designation fee for the first 10 national or regional offices:	
if paid before Jan. 1, 1986	70.00
if paid on or after Jan. 1, 1986	80.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Dec. 17, 1985. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Jan. 18, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,368,544 through 4,369,525
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the pa-

tent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patent listed below has expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENT WHICH EXPIRED NOV. 3, 1985 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,298,873	06/222,104	11/03/81

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

D. 271,049, Re. S.N. 568,752, Filed Jan. 6, 1984, Cl. D28/007, APPLICATOR CONTAINER, Doris Du Cret, Owner of Record: *Bristol-Myers Co., New York, N.Y.,* Attorney or Agent: Prabodh I. Almaula, et al., Ex. Gp.: 292

4,417,669, Re. S.N. 796,293, Filed Nov. 8, 1985, Cl. 221/026, MULTIPLE BAG DISPENSER, Henry L. Knowles, Owner of Record: *Inventor,* Attorney or Agent: Thomas G. Watkins, III, et al., Ex. Gp.: 311

4,424,250, Re. S.N. 800,180, Filed Nov. 20, 1985, Cl. 428/198, CARPET FACED TEXTILE PANEL, Ronald W. Adams, et al., Owner of Record: *Gates Farmed-Fibre Products, Inc., Auburn, Me.,* Attorney or Agent: Frank P. Grassler, et al., Ex. Gp.: 154

4,455,651, Re. S.N. 795,868, Filed Nov. 7, 1985, Cl. 370/104, SATELLITE COMMUNICATIONS SYSTEM AND APPARATUS, Paul Baran, Owner of Record: *Equatorial Communications Co., Mountain View, Calif.,* Attorney or Agent: Thomas A. Gallagher, et al., Ex. Gp.: 263

4,490,721, Re. S.N. 785,304, Filed Oct. 7, 1985, Cl. 343/368, MONOLITHIC MICROWAVE INTEGRATED CIRCUIT WITH INTEGRAL ARRAY ANTENNA, Ronald J. Stockton, et al., Owner of Record: *Ball Corp., Muncie, Ind.,* Attorney or Agent: Gilbert E. Alberding, Ex. Gp.: 222

4,492,920, Re. S.N. 793,579, Filed Oct. 31, 1985, Cl. 324/146, ELECTRIC INDICATOR WITH RETURN-TO-ZERO FEATURE AND COMPENSATING COIL TO CANCEL THE RETURN-TO-ZERO FEATURE DURING MEASUREMENT, Arthur L. Reenstra, Owner of Record: *Beede Electrical Instrument Co., Inc., New Hope, Pa.,* Attorney or Agent: Stanley M. Schurgin, et al., Ex. Gp.: 267

4,533,584, Re. S.N. 799,841, Filed Nov. 19, 1985, Cl. 428/116, MULTI-CHANNEL BODY, Yukihisa Takeuchi, et al., Owner of Record: *NGK Insulators, Ltd., Nagoya City, Japan,* Attorney or Agent: Roger W. Parkhurst, et al., Ex. Gp.: 154

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Erratum

The notice of adverse decision in interference, appearing in the *Official Gazette* of Nov. 19, 1985, to wit:

> In Interference No. 100,881, involving Patent No. 4,149,079, D. Ben-Zeev and D. Inbar, METHOD OF AND MEANS FOR SCANNING A BODY TO ENABLE A CROSS-SECTION THEREOF TO BE RECONSTRUCTED, final judgment adverse to the patentees was rendered Aug. 28, 1984, as to claims 6, 7, 9, 14 and 21.

is rescinded as to claims 14 & 21. The Interference was dissolved as to claims 14 & 21. Consequently claims 14 & 21 of the Dan Ben-Zeev, et al., patent are not cancelled.

NANNIE B. HENRY,
Deputy Clerk, Board of Patent Appeals and Interferences.

Dec. 13, 1985.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 21, 1986

D. 281,269	4,504,159	4,527,240	4,543,494
4,347,352	4,506,004	4,528,533	4,543,870
4,357,351	4,507,044	4,528,603	4,544,276
4,362,809	4,507,391	4,528,609	4,544,399
4,369,857	4,510,051	4,529,073	4,544,505
4,379,088	4,510,224	4,529,207	4,544,698
4,379,710	4,510,510	4,530,113	4,545,074
4,420,632	4,511,173	4,530,192	4,545,203
4,450,539	4,513,432	4,530,490	4,545,499
4,451,404	4,514,534	4,530,877	4,545,580
4,458,174	4,514,972	4,532,530	4,545,610
4,466,526	4,514,973	4,534,091	4,546,566
4,466,918	4,514,974	4,534,259	4,546,859
4,477,665	4,514,975	4,534,579	4,547,259
4,481,274	4,515,117	4,536,187	4,547,647
4,481,744	4,517,008	4,538,015	4,547,981
4,482,751	4,517,393	4,538,378	4,548,213
4,483,449	4,518,228	4,539,390	4,548,372
4,485,472	4,519,080	4,539,413	4,548,452
4,486,495	4,519,412	4,539,422	4,548,652
4,489,008	4,519,813	4,540,340	4,549,021
4,489,124	4,520,399	4,540,419	4,549,051
4,489,348	4,520,410	4,540,516	4,549,212
4,491,293	4,521,925	4,540,684	4,549,617
4,494,726	4,522,106	4,540,714	4,549,759
4,495,264	4,522,664	4,542,071	4,549,787
4,495,568	4,524,356	4,542,436	4,549,854
4,497,561	4,524,827	4,542,727	4,551,398
4,501,040	4,525,306	4,542,911	4,552,258
4,501,808	4,525,789	4,542,950	4,553,911
4,503,910	4,526,114	4,543,099	
4,504,007	4,527,020	4,543,320	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 7, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-14-84
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-14-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-30-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	10-19-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,413,656 to 3,419,906, inclusive

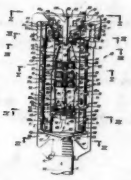
Plant Patents ..... Numbers 2,847 to 2,855 inclusive

REEXAMINATIONS

JANUARY 21, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,854,664 (444th)
SPRINKLER SYSTEMS
Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.
Reexamination Request No. 90/000,542, Apr. 9, 1984.
Reexamination Certificate for Patent No. 3,854,664, issued Dec. 17, 1974, Ser. No. 405,690, Oct. 11, 1973.
Continuation of Ser. No. 346,445, Mar. 30, 1973, abandoned.
Int. Cl.[4] B05B *3/16*
U.S. Cl. 239—206



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11 & 17–20** is confirmed.

Claim **13** is determined to be patentable as amended.

Claim **16**, dependent on an amended claim, is determined to be patentable.

Claims **12, 14** and **15** were not reexamined.

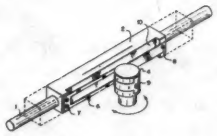
1. In a sprinkler system having fluid under pressure flowing therethrough, and a sprinkler head operatively connected to said system having a nozzle for dispersing said fluid therefrom, the improvement which comprises:

impeller means associated with said head operatively engaging said nozzle for rotating said nozzle in response to said fluid passing through said system, said impeller means including transmission means for transmitting movement of said impeller to said nozzle, said transmission means being sealed off from engagement by said fluid at one end by an expandable diaphragm separating said transmission means from said fluid and closed-off in a fluid-tight manner at the other end and a lubricating medium completely filling the sealed-off portion of said transmission means, said lubricating medium being free to selectively contract or expand thereby displacing said diaphragm in response to varying ambient conditions encountered by said sprinkler head.

* * * * *

Attention is directed to the decisions of The Toro Company v. The Nelson Company, 213 USPQ 207 (C.D. Ill, 1981) and The Toro Company v. The Nelson Company, 223 USPQ 636 (C.D. Ill, 1984).

B1 4,161,004 (445th)
HEAD POSITIONING MECHANISM FOR RECORDING/PLAYBACK MACHINE
Warren L. Dalziel, Monte Sereno, Calif., assignor to Shugart Associates, Sunnyvale, Calif.
Reexamination Request No. 90/000,530, Mar. 19, 1984.
Reexamination Certificate for Patent No. 4,161,004, issued Jul. 10, 1979, Ser. No. 784,905, Apr. 5, 1977.
Int. Cl.[4] G11B *5/56*
U.S. Cl. 360—106



AS A RESULT OF REEXAMINATION: IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–21** is confirmed.

New claim **22** is added and determined to be patentable.

1. A positioning mechanism for a read/write head of a recording/playback machine of the type utilizing discs upon which information is magnetically stored, said positioning mechanism comprising:

a rotary drive motor having an armature shaft;

a capstan affixed to the armature shaft of said rotary drive motor for rotation therewith when the motor is actuated;

a carriage means adapted to carry a magnetic read/write head;

a guide means connected to said carriage means to define a path of movement therefor, said path being parallel to a line generally tangent to said capstan;

a flexible, nonstretchable band means having opposite ends, said band means being wound about said capstan and fixed thereto with the opposite end portions of said band extending from said capstan substantially along said line tangent; and

attachment means for attaching respective ends of said band means to spaced-apart locations on said carriage means, said attachment means including resilient means for attaching one end of said band to said carriage and for applying a biasing force thereto which tends to maintain a predetermined tension in said band whereby upon an incremental angular rotation of said armature shaft, one end portion of said band is wound off of said capstan and the opposite end portion of said band is simultaneously wound onto said capstan, thereby causing said carriage means to move along said path.

B1 4,470,385 (446th)

IGNITION DISTRIBUTOR

John F. Burk, and Terry A. Spidel, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Reexamination Request No. 90/000,727, Feb. 25, 1985.
Reexamination Certificate for Patent No. 4,470,385, issued Sep. 11, 1984, Ser. No. 419,829, Sep. 20, 1982.
Int. Cl.[4] F02D 7/02
U.S. Cl. 123—146.5 B

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **3** is confirmed.

Claims **1** and **2** are cancelled.

New claim **4** is added and determined to be patentable.

4. An ignition distributor for an internal combustion engine comprising, a base member, a shaft journaled for rotation in said base member carrying a rotor which is driven thereby, a distributor cap secured to said base member having an input terminal and a plurality of circumferentially spaced output terminals, said rotor carrying conductive means electrically connected to said input terminal and having a portion thereof moving past said cap output terminals when said rotor is rotated, a plate member secured to said shaft for rotation therewith having a radially extending slot, a bore formed in an internal wall of said base member, and a locking pin one end of which is press-fitted into said bore for securing one said end of said pin to said base member, said locking pin extending toward the interior of said cap with a portion of the opposite end thereof being positioned within said slot when said shaft and attached plate member are assembled to said base member whereby the distributor shaft and rotor are locked from rotation relative to the cap and base member, said slot, said rotor and cap being so oriented that said conductive means of said rotor is substantially aligned with an output terminal of said cap when said pin is positioned in said slot, said locking pin being formed of a breakable material which breaks when said distributor shaft is driven by an engine to thereby permit free rotation of said shaft and rotor.

REISSUES

JANUARY 21, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,066

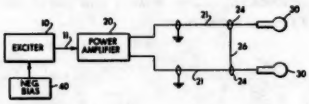
METHOD FOR TREATING BENIGN AND MALIGNANT TUMORS UTILIZING RADIO FREQUENCY, ELECTROMAGNETIC RADIATION

Harry H. Leveen, 321 Confederate Cir., Charleston, S.C.

Original No. 3,991,770, dated Nov. 16, 1976, Ser. No. 643,661, Dec. 23, 1975. Continuation-in-part of Ser. No. 595,094, Jul. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,102, Jan. 24, 1974, abandoned. Application for reissue Jun. 30, 1982, Ser. No. 393,772

Int. Cl.[4] A61N *1/40*

U.S. Cl. 128—804 **8 Claims**



5. A method of treating a naturally occurring tumor in a human which comprises placing a portion of the body of the human in which the tumor is located in a radio frequency electromagnetic field ranging from 100 kilohertz to 200 megahertz, heating the tumor tissue and adjacent normal tissue in said portion of said body by absorption of energy from said radio frequency electromagnetic field for a period of time and with intensity sufficient to heat said tumor tissue at least 6° C. above the temperature of the adjacent normal tissue to cause necrosis of said tumor tissue, but insufficient to heat said adjacent normal tissue above 40° C. to cause significant damage to the adjacent normal tissue.

Re. 32,067

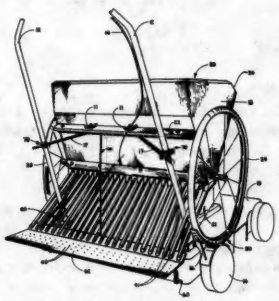
UNIVERSAL LAWN SPREADER ATTACHMENT FOR LAWN MOWERS

Edward P. Emory, P.O. Box 5907, Lake Charles, La. 70606

Original No. 4,327,541, dated May 4, 1982, Ser. No. 120,928, Feb. 12, 1980. Application for reissue Sep. 30, 1982, Ser. No. 428,531

Int. Cl.[4] A01D *19/00*

U.S. Cl. 56—16.8 **12 Claims**



2. A spreader attachment, for wheeled lawnmowers with a rearwardly extending handle for manipulation of the lawnmower by the user, for dispensing fertilizer and the like on the ground in association with the lawnmower comprising:

hopper means, including associated flow control means for controlling the flow of fertilizer from said hopper means to the ground, for mounting on top of the lawnmower in front of and above the lawnmower handle and for holding the fertilizer prior to dispensing the fertilizer to the ground;

mounting connector means attachable to said hopper means for mounting said hopper means on and connecting it to the lawnmower for transport across the ground in association with thelawnmower;

drive wheel means connected to said flow control means for engaging at least one wheel of the lawnmower as a source of motive power and for rotationally driving said flow control means in response to the movement of the engaged lawnmower wheel; and

fertilizer distribution means connectable to said hopper means for extending down from said hopper means at the back of the lawnmower and at least in part in the central, back area of the lawnmower down to an area adjacent the ground level and behind the lawnmower housing, said fertilizer distribution means comprising

a plurality of laterally spaced, discrete, separate, downwardly extending channel means, at least the side end ones of which are flexible but capable of being self-supporting in their rigidity, for extending down, at least in the area of the lawnmower where the lawnmower handle extends and adjacent to the lawnmower housing, for distributing the fertilizer from the hopper to the ground through the spaced channel means, said channel means comprising separate, straight, flexible but capable of being self-supporting, elongated tubes disposed down and rearwardly in at least general parallal array; and

laterally extending, elongated [splash] *attachment* element means connected to and extending laterally across the bottom end portions of said tubes for [further] *the positioning of said tubes for* distributing the fertilizer from the ends of said tubes out to the ground and for holding said tubes in position at their lower ends.

Re. 32,068

DISTILLATIVE SEPARATION EMPLOYING BOTTOM ADDITIVES

James M. Ryan, Weston, and John V. O'Brien, Shrewsbury, both of Mass., assignors to Koch Process Systems, Inc., Westboro, Mass.

Original No. 4,428,759, dated Jan. 31, 1984, Ser. No. 458,047, Jan. 14, 1983. Application for reissue Feb. 22, 1985, Ser. No. 704,180

Int. Cl.[4] F25J *3/04*

U.S. Cl. 62—17 **31 Claims**

1. In a method for the distillative separation, in a distillative column containing vapor-liquid contact devices, of a hydrocarbon-containing feed stream, which method comprises:

(a) introducing the feed stream into a distillative column operating under defined conditions of pressure, temperature and feed composition;

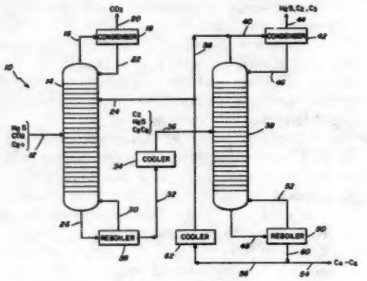
(b) withdrawing an overhead product stream encircled in at least one component to be removed from the feed stream;

(c) condensing at least a portion of the overhead product stream in a condenser and recycling a portion of the condensed overhead stream to the top portion of the said distillative column;

(d) recovering a bottom product stream with defined specifications enriched with at least one defined component of the feed stream for which recovery is sought; and

(e) reboiling at least a portion of the withdrawn bottom product stream and recycling a portion of the bottom stream to the bottom portion of the column, the improve-

ment which comprises introducing from about 1 to 30 mols per 100 mols of feed stream of a recycled liquid bottom product stream comprising [C_3–C_6] alkanes *having at least three carbon atoms* into an overhead condenser zone of the distillation column, the liquid bottom product stream introduced into the condenser zone concurrently and admixed with the overhead product stream in the condenser zone, the overhead product stream not being subject to substantial contamination by the recycled bottom product stream in the condenser zone, and the



amount of the recycled bottom product stream sufficient, to provide adjusting of the operation condition of the distillation zone to effect a saving in the distillation column operating energy by:

(a) increasing the temperature of the condenser zone of the distillation column by about 10° F. or more; or

(b) decreasing the temperature of the bottom of the distillation column by about 5° F. or more; or

(c) reducing the distillation column operating pressure by about 20 psi or more.

Re. 32,069

DEVICE FOR DETECTING A KEY SWITCH OPERATION

Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,148,017, dated Apr. 3, 1979, Ser. No. 712,815, Aug. 9, 1976. Application for reissue Sep. 17, 1979, Ser. No. 76,319

Claims priority, application Japan, Aug. 15, 1975, 50-99151; Aug. 15, 1975, 50-99152; Aug. 20, 1975, 50-100877

Int. Cl.[4] G10H *1/00*; G08C *9/00*

U.S. Cl. 84—1.01 **12 Claims**

11. A device for detecting a key switch operation comprising:

a key switch matrix circuit including a plurality of key switches arranged electrically in rows and columns each connected via a unidirectional element between row conductors and column conductors, said rows representing respective blocks of the key switches;

first means for detecting simultaneously all blocks in which key switches in operation exist;

second means for simultaneously detecting all columns in a single one of said detected blocks on which the key switches in operation are disposed, said column detecting being carried out for one block after another, for each of the separate blocks detected by said first means;

control means for causing said second means to implement the column detection for one block at a time with respect to each of the blocks detected by said first means;

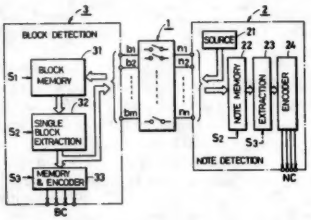
first capacitance means provided between each row conductor and ground;

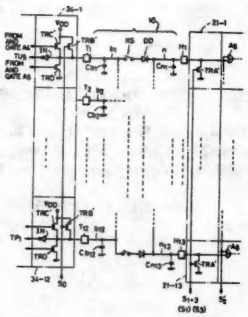
first voltage applying means connected to said first capacitance means to apply thereto a first level voltage which would forward bias said unidirectional elements for a first predetermined period as preparation for the block detection;

second capacitance means provided between each column conductor and ground;

second voltage applying means connected to said column conductors to apply thereto a second level voltage which would forward bias said unidirectional elements for a second predetermined period so that the voltage of such row conductor that is connected to key switches in operation is changed from said first level voltage to said second level voltage, and this change being detected by said first means;

said second level voltage being applied also to said second capacitance means for this second predetermined period as preparation for the note detection, said first means being arranged to apply said first level voltage to the row conductors of the detected blocks one at a time for a third predetermined period so that the voltage of such column conductor that is connected to a key switch in operation is changed from said second level voltage to said first level voltage, and this change being detected by said seond means;





each of said key switches in operation being identified by a combination key code designating the single detected block and the column on whch said key switch in operation is disposed.

12. An electronic musical instrument comprising a key code generator which is composed of means for sequentially scanning with a first clock a plurality of blocks into which a plurality of key switches having contacts to be closed are divided, a priority selector for selectively outputting with a second clock closure information of each block sequentially in accordance with predetermined priority, means for inhibiting the first clock with an operation signal of the priority selector during its operation to temporarily stop the block scanning and means for converting the output from the priority selector and information of the block scanning to key data of a binary code and means for detecting completion of one scanning to output a variable frame signal of one frame time determined by the number of blocks and the number of closed key switches the converting means operating during each time frame.

Re. 32,070

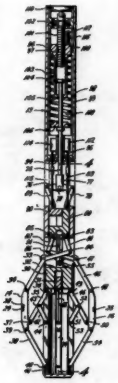
BOREHOLE APPARATUS FOR INVESTIGATING SUBSURFACE EARTH FORMATIONS INCLUDING A PLURALITY OF PAD MEMBERS AND MEANS FOR REGULATING THE BEARING PRESSURE THEREOF

André M. Vezin, Viroflay, France, assignor to Schlumberger Technology Corp., Houston, Tex.

Original No. 3,423,671, dated Jan. 21, 1969, Ser. No. 219,619, Aug. 27, 1962. Application for reissue Jan. 30, 1978, Ser. No. 873,348

Int. Cl.[4] G01V *3/24, 3/18*

U.S. Cl. 324—347 25 Claims



22. In apparatus for investigating earth formations traversed by a borehole, the combination comprising:

an elongated support member having a longitudinal axis and adapted for longitudinal movement through a borehole;

a plurality of wall-engaging members having wall-engaging faces and arranged with a first pair of the wall-engaging members individually disposed on laterally -opposite sides of the support member along a first given line in a lateral plane and a second pair of the wall-engaging members individually disposed on laterally-opposite sides of the support member along a second given line at right angles to the first given line and in the same lateral plane;

a plurality of sliding members movably mounted on the support member for providing longitudinal movement of the sliding members with respect to the support member;

a plurality of primary arm members disposed in two pairs, each primary arm member being individually pivotally coupled to one of the sliding members and to one of the wall-engaging members for enabling movement of the wall-engaging members away from the support member without relative longitudinal movement;

a plurality of linkage means disposed in two pairs, each linkage means being individually pivotally coupled to the support member at a first pivot point providing a fixed reference in the lateral plane and to one of the wall-engaging members at a second pivot point in the same lateral plane, and including an arm member pivotally coupled between the second pivot point and a third pivot point in longitudinal alignment with the first pivot point, the first, second and third pivot points defining a right triangle having such arm member as its hypotenuse, and a linkage member pivotally connected between such arm member and the first pivot point as the median of the hypotenuse for preventing longitudinal movement of the wall-engaging members with respect to the support member while the arm members cooperate to keep the faces of the wall-engaging members substantially parallel to the longitudinal axis of the support member; and

means for applying separate driving forces to the different pairs of respectively coupled arm members, linkage means and wall-engaging members for enabling unequal lateral extension of the different pairs of wall-engaging members.

Re. 32,071

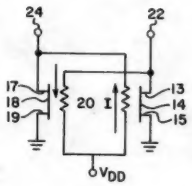
RESISTIVE GATE FET FLIP-FLOP STORAGE CELL

Claude L. Bertin, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,158,239, dated Jun. 12, 1979, Ser. No. 862,476, Dec. 20, 1977. Application for reissue Feb. 25, 1981, Ser. No. 238,382

Int. Cl.[4] G11C *11/40*

U.S. Cl. 365—182 11 Claims



11. A binary switching circuit, comprising:

an insulated gate field effect transistor device having its source/-drain path connected between a first binary potential and an output node and having a gate electrode;

a load device connected between said output node and a second binary potential;

said gate electrode composed of a resistive material having a first side connected to said second binary potential and a second side connected to a binary signal source selectively inputting either said first binary potential or said second binary potential thereto;

said first binary potential applied to said second side causing a current to flow through said resistive material reducing the potential of portions of said resistive material between said first and second sides to be a magnitude between said first and said second binary potentials, thereby reducing the conductivity of said source/drain path resulting in a first output signal potential at said output node;

said second binary potential applied to said second side causing substantially no current to flow through said resistive material, maintaining the potential of said gate at said second binary potential, thereby increasing the conductivity of said source/drain path resulting in a second output potential at said output node;

whereby said binary signals applied to said second side of said gate produce a binary output signal at said output node.

PLANT PATENTS

GRANTED JANUARY 21, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,637

MINIATURE ROSE PLANT-JEAN KENNEALLY

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Jun. 6, 1984, Ser. No. 617,991
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of miniature rose plant named 'Jean Kenneally' of hardy, dwarf, vigorous growth, attractive appearance, substantially as illustrated and described, characterized by its blooms of rich Apricot with deeper tones of Mars Orange on the under side of the central petals, this variety being easily asexually reproduced from cuttings, with flowers borne usually one to a stem, but occasionally in sprays of 3 to 5 or more.

5,638

ROSE PLANT JACAIM

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,828
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright plant, photosensitive pigments aging from near white to dark red, and little to no fragrance.

5,639

ROSE PLANT JACANGE 74-3563

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,827
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—17 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright plant whose foliage is resistant to rose powdery mildew, stems which bear both large and small prickles, and whose blooms are orange (R.H.S. 33A) and lacking in fragrance.

5,640

ROSE PLANT JACHSE

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Apr. 4, 1984, Ser. No. 596,829
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—18 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright plant, mildew resistant foliage, flower color of yellow to light orange, and little or no fragrance.

5,641

PEACH TREE-'JUNE CREST'

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Nov. 14, 1983, Ser. No. 432,664
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach tree, as shown and described, of large size, upright, vigorous growth and a regular productive bearer of large, yellow flesh, early maturing, clingstone fruit with a high degree of red skin color and the firm flesh being of good eating and shipping quality.

5,642

AVOCADO TREE

Royce D. Stauffer, 234 Toro Canyon Rd., Carpinteria, Calif. 93013

Filed Jul. 24, 1984, Ser. No. 633,973
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—44 1 Claim

1. A new and distinct variety of avocado tree as herein disclosed, characterized by vigorous growth, both alone and with a Hass top, and an unusual ability to survive under adverse soil conditions as shown by its origin and subsequent tests.

5,643

LILY PLANT: UNIQUE

Gerardus C. Van der Salm, Rte. 1, Box 422, Woodland, Wash. 98674

Filed Nov. 14, 1983, Ser. No. 551,272
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its vigorous growth and a flower with a deep greyed-orange central region, generally white petals with a diffused greyed-orange perimeter and a more concentrated greyed-orange tip region.

5,644

LILY PLANT: MALTA

Gerardus C. Van der Salm, Rte. 1, Box 422, Woodland, Wash. 98674

Filed Nov. 14, 1983, Ser. No. 551,274
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its vigorous growth and the pink color of its flowers.

PATENTS

GRANTED JAN. 21, 1986

ERRATA

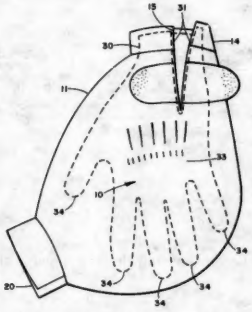
For CLASS	See PATENT NO.
029–025	4,564,980
033–432	4,565,016
112–121	4,565,140
522–112	4,565,614
355–113	4,565,985

PATENTS

GRANTED JANUARY 21, 1986

GENERAL AND MECHANICAL

4,564,956
GOLF GLOVE WITH RAIN SHIELD
Dominick DiBuono, 12 Richmond Hill Rd., Greenwich, Conn. 06830
Filed Jan. 23, 1984, Ser. No. 573,282
Int. Cl.[4] A41D *13/08*
U.S. Cl. 2—16 **3 Claims**



1. A combination covering and glove for use in the rain and comprising:

an inner glove having a wrist band, a palm section attached to the wrist band, and a plurality of finger sleeves attached to the palm section; an outer covering surrounding said inner glove and having an upper wrist surrounding end sewingly fixed to the periphery of the said wrist band and a lower end with an opening for receiving the handle of an athletic club, said inner glove including an elongated slit longitudinally extending through the wrist band, and said outer covering including a slit longitudinally extending from the upper wrist surrounding end, the edges of the slit of the outer covering being connected to edges of the slit in the inner glove; and wherein said outer covering has an elongated slot on the lateral side thereof which is adjacent to the palm portion of said inner glove; said slot extending toward and in the same direction as the central axis of the said opening for the athletic club, whereby the user may pass a second ungloved hand through said slot to grasp said club in cooperation with a hand in the inner glove.

4,564,957
BABY BOTTLE SECURITY GARMENT
Ruth Scharf, 301 E. 48th St., New York, N.Y. 10017
Filed May 25, 1984, Ser. No. 614,212
Int. Cl.[4] A41B *13/10*; **A41D** *11/00*
U.S. Cl. 2—75 **28 Claims**

1. A baby bottle security garment comprising, in combination:

garment means for covering at least part of the chest area of an infant;

sleeve means for removably receiving and securing therein a baby bottle; and

strap means for securing said sleeve means to said garment means so that said sleeve means hangs from said garment and is normally positioned proximate the chest area of an infant wearing the garment when the chest area of the infant is in an upright position, wherein the strap means includes at least one strap for connecting the garment means to the sleeve means.

4,564,958
NECKTIE
Robert F. Woodward, 1642 Avon Pl., NW., Washington, D.C. 20007
Filed Mar. 23, 1983, Ser. No. 478,082
Int. Cl.[4] A41D *25/02*
U.S. Cl. 2—150 **1 Claim**

1. A four-in-hand necktie permanently provided on its backside with a single tactile indicator located at a predetermined standard distance of about 12 inches from the midlength of the necktie toward the extremity of the end which underlies the other end when the necktie is tied, such indicator being adapted to be located in substantially flush alignment with the collar button of a collared garment when said necktie is draped over the neckband thereof to assure that said ends will be substantially even when the necktie is tied, whereby such indicators can be applied by a manufacturer to a series of neckties and be effective in use with all such ties.

4,564,959
CRASH HELMET
Christian Zahn, Brunswick, Fed. Rep. of Germany, assignor to Schuberth-Werk GmbH & Co. KG, Brunswick, Fed. Rep. of Germany
Filed Jun. 1, 1984, Ser. No. 616,134
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1983, 3320301
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—411 **20 Claims**

1. A crash helmet for cyclists, comprising a substantially spherical, impact and shock resistant, synthetic resin cap part, which defines a generally smooth and closed aerodynamically-shaped external surface, wherein the external surface of the cap part comprises a plurality of topographical surface irregularities arranged adjacently to each other, and wherein the irregularities are shaped and spaced so as to create turbulent air flow

substantially near the surface of the cap part, for reducing the pressure differential between the front and rear of the helmet

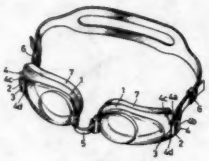
caused by high speed air flow over the helmet, while keeping the air resistance to a minimum.

4,564,960

DEVICE FOR FIXING A BELT OF GOGGLES

Takashi Nishiyama, 22-4, Ehara-cho, 1-chome, Nakano-ku, Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,408
Int. Cl.[4] A61F 9/02
U.S. Cl. 2—452 3 Claims



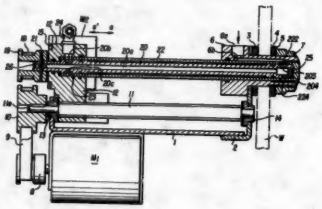
1. A face mask or goggles structure having a body portion for fitting over a wearer's eyes and a strap attached to opposite ends of the body portion for surrounding the wearer's head, the improvement comprising a strap attachment assembly at least at one end of the body portion, said assembly including a web member formed at said end of the body portion, a slit in the web member, an end portion of the strap being passed through the slit from an inner surface of the web member, a generally flat planar strap-securing fitting unattached to the body portion of the structure, the fitting including a crossbar having a length greater than that of the slit, fulcruming means extending from opposite ends of the crossbar on one side thereof, and finger grip means extending from opposite ends of the crossbar on the other side thereof, the end portion of the strap being looped over the crossbar on an outer surface of the web member and being passed back through the slit whereby the fitting is forced against the outer surface of the web member by tension applied to the strap and wherein the length of the strap may be adjusted by lifting the finger grip means of the fitting away from the outer surface of the web member causing the fulcruming means to turn with respect to the outer surface of the web member so as to raise the crossbar and allow the strap to move lengthwise relative thereof.

4,564,961

APPLIANCE FOR WASHING PARTS OF HUMAN BODY

Kenichi Kaneko, Kariya; Yuji Hirashiba, and Shinji Kawai, both of Toyota, all of Japan, assignors to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Mar. 20, 1984, Ser. No. 591,493
Claims priority, application Japan, Mar. 29, 1983, 58-53027; Mar. 29, 1983, 58-45379[U]; Mar. 29, 1983, 58-45380[U]
Int. Cl.[4] E03D 9/08
U.S. Cl. 4—443 7 Claims



1. An appliance for washing the lower parts of the human body, comprising:

a toilet bowel;

nozzle means having an outer nozzle provided with first holes and an inner nozzle provided with second holes, the inner nozzle being disposed within the outer nozzle; and

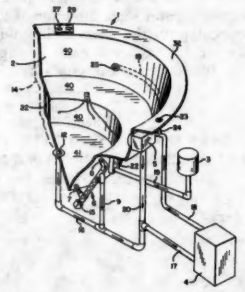
rotating means for rotating the inner nozzle wherein the rotating means further comprises a stepper motor.

4,564,962

ENERGY EFFICIENT THERMOSYPHONING SPA HEATER SYSTEM

Kenneth B. Castleberry, 2833 NW. 12th Ave., Albany, Oreg. 97321, and Norman L. McDonald, 4316 Riverside Rd. South, Salem, Oreg. 97306

Continuation of Ser. No. 497,693, May 24, 1983, abandoned. This application Jun. 6, 1985, Ser. No. 741,726
Int. Cl.[4] A61H 33/02
U.S. Cl. 4—543 4 Claims



1. A spa comprising:

(a) A spa shell having at least one continuous connected spa shell side surface and a spa bottom;

(b) an air blower attached to said spa shell by means of an air pipe interconnected to an air manifold from which a plurality of bubble inlets communicate through said spa shell;

(c) a thermosyphoning unit where a heating pipe with a heating element within said heating pipe is attached to said side surface of said spa shell by means of a cold inlet pipe and a hot outlet pipe located above said cold inlet pipe wherein a plane passing through said cold inlet pipe and

being perpendicular to said spa bottom will not pass through said hot outlet pipe;

(d) a one-speed pump circulating fluid from said spa shell by means of at least four inlets, namely, a drain, a skimmer, along with said cold inlet pipe and said hot outlet pipe of said thermosyphoning unit which communicate through said spa shell where said thermosyphoning unit, said drain by a drain pipe, and said skimmer by a skimmer pipe interconnect to said pump by means of a suction pipe and, further, where said pump provides fluid and air to a spa shell by means of a pump pipe to a plurality of water jets where an air inlet provides air to said pump pipe by means of air inlet pipe which communicates with the atmosphere through an air inlet.

4,564,963

DRYING DEVICE FOR SHOWER SPACE

Nils R. Bergmark, Ringvägen 14, S-930 47 Byske, Sweden

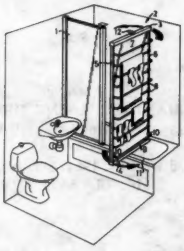
PCT No. PCT/SE84/00037, § 371 Date Oct. 5, 1984, § 102(e) Date Oct. 5, 1984, PCT Pub. No. WO84/03030, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 7, 1984, Ser. No. 666,625

Claims priority, application Sweden, Feb. 10, 1983, 8300715

Int. Cl.[4] A47K *3/22*

U.S. Cl. 4—597 **7 Claims**



1. A wall section in the form of a splash-proof water repellent screen wall for a shower space, said wall section being provided on one side with hanging means for drying laundry, characterized in that the wall section is formed of a screen rotatable at least substantially 180° about a vertical axis at its center such that said hanging means is positioned outside said shower space when the shower space is in use and such that the hanging means is positioned within the shower space to obsure the drying laundry from view when the hanging means is to be used as a drying rack; and that the hanging means comprise a plurality of hanger bars disposed at different levels, for articles, such as clothing, to be dried.

4,564,964

RETAINING ELEMENT FOR SWINGING WEIGHTS

José Pardo Herrera, Saragossa, Spain, assignor to Industrias Hidraulicas Pardo S.A., Spain

Filed Jul. 1, 1983, Ser. No. 510,398

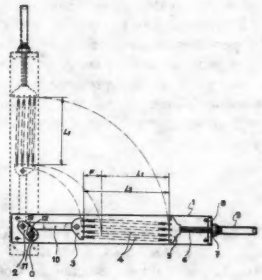
Int. Cl.[4] A47C *17/40*

U.S. Cl. 5—164 R **6 Claims**

1. A retaining element for a swinging weight, comprising a covering secured to the swinging weight; a shaft of rotation to which the covering is pivotally attached for the covering to pivot around the shaft between two angularly spaced apart positions;

first and second spaced apart support parts, which are spaced a distance apart from each other along the covering; a plurality of stretchable elements stretched between and attached on the support parts and being normally biased to pull the support parts together;

an arm fixed to the shaft of rotation and fixed thereto against rotation as the covering pivots; the first of the support parts being pivotally connected to the arm at a location spaced from the shaft of rotation; the arm extending in a direction that oblique to the direction between the support parts, whereby as the covering pivots between its extreme positions while the arm remains stationary, the arm pulls



the first support part to which it is attached selectively away from the other of the parts when the covering pivots in one direction and permits the first part to move toward the other part when the covering pivots in the other direction, respectively stretching and permitting return of the stretchable elements.

4,564,965

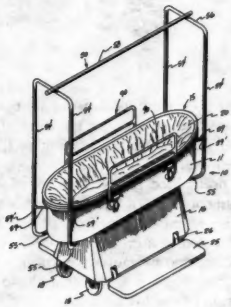
FLUIDIZED PATIENT SUPPORT SYSTEM

Vernon L. Goodwin, Charlotte, N.C., assignor to Support Systems International, Inc., Charleston, S.C.

Filed Jan. 17, 1984, Ser. No. 571,557

Int. Cl.[4] A47C *27/08, 31/02, 21/08;* A61G *7/06*

U.S. Cl. 5—453 **32 Claims**



1. An improved patient support system comprising:

(a) an open ended container means having a bottom wall and side walls;

(b) a support means for said container means;

(c) a perforated plate received within said container means; said plate defining a plurality of mounting openings therein;

(d) a plurality of spacer means received within said container and being located between said perforated plate and said bottom wall of said container means, whereby a plenum chamber is defined between said plate and said bottom wall; spacer means being located beneath each mounting opening in said plate and secured to said plate thereat;

(e) a fluid diffuser means received atop said perforated plate and secured thereto, said diffuser means being generally uniformly pervious to passage of fluid under pressure therethrough;

(f) sealing means received between the outer periphery of said diffuser means and an inside of said sidewalls of said container means;

(g) a mass of granular material received within said container atop said diffuser means;

(h) flexible sheet means located atop said granular material and being removably secured completely around edges of same at an upper end of said side walls, said sheet means being pervious to passage of fluid therethrough while being impervious to the passage of granular material; and

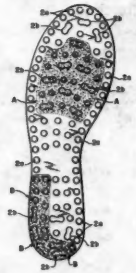
(i) means to generate fluid pressure in said plenum chamber adequate to diffuse through said diffuser means and fluidize said granular material sufficient to support a patient thereon.

4,564,966

CONSTRUCTION FOR AN ATHLETIC SHOE AND PROCESS OF MAKING

York Chen, Taipei, Taiwan, assignor to Contax Sports, Inc., Burlingame, Calif.

Filed Dec. 30, 1983, Ser. No. 567,075
Int. Cl.[4] A43B *13/22, 13/04*
U.S. Cl. 12—146 B **15 Claims**



1. A process for producing a lower for footwear, such as a sole for an athletic shoe, comprising the steps of:

premolding and partly curing a portion of the lower of a relatively wear-resistant material;

disposing said premolded partly cured portion in a master mold including a form of the lower at a location with respect to the remaining portions of the lower that is normally subjected to a greater degree of wear;

partly surrounding said premolded portion with a material of less wear resistance in a master mold to form the remaining portion of the lower; and

completing curing so as to mold all of the portions into a composite lower of integral construction with an area of its undersurface of at least one relatively wear-resistant portion at a location normally subjected to a greater degree of wear and use.

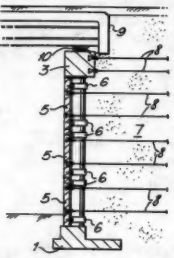
4,564,967

BRIDGE ABUTMENT

Henri Vidal, Boulevard Maillot, Neuilly-sur-Seine, France

Filed Dec. 6, 1983, Ser. No. 558,915
Claims priority, application United Kingdom, Dec. 6, 1982, 8234688
Int. Cl.[4] E01D *19/02*
U.S. Cl. 14—75 **19 Claims**

1. A stabilized earth bridge abutment comprising a compacted earth mass containing reinforcing members therein to frictionally stabilise the mass, there being provided, in said mass and close to a substantially vertical surface thereof, support means which bears the vertical load of the deck of the



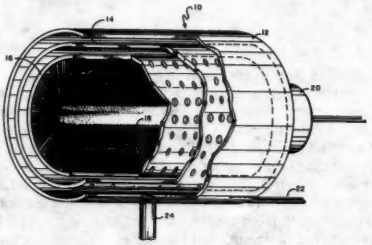
bridge while substantially all horizontal forces are absorbed by the stabilised earth mass.

4,564,968

HAND-CLEANING DEVICE

Elizabeth Buckley, 401 Morrissey Blvd., Dorchester, Mass. 02125

Filed Dec. 17, 1984, Ser. No. 682,550
Int. Cl.[4] A47K *7/04*
U.S. Cl. 15—21 R **3 Claims**



1. A hand-washing device, comprising:

an outer drum;

a stationary drum having a plurality of perforations defined therearound positioned concentrically within said outer drum;

a movable drum having a plurality of perforations defined therearound positioned concentrically within said perforated stationary drum;

means to rotate said movable drum;

water entry means adapted to enter water into said outer drum,

and, once entered in said outer drum, to pass through the perforations in said stationary drum and then through the perforations in said movable drum;

brush members concentrically positioned around the inside of said movable drum adapted to receive water through the perforations in said movable drum to wash a hand inserted into said movable drum while it is rotating; and

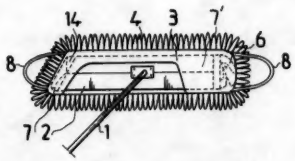
drain means to remove said water which has passed through said device.

4,564,969

MEANS FOR CLEANING FLOOR

Ahti Heinonen, SF-25470, Kisko, Finland

Filed May 3, 1984, Ser. No. 606,614
Claims priority, application Finland, May 17, 1983, 831734
Int. Cl.[4] A47L *13/24*
U.S. Cl. 15—147 A 2 Claims



1. A means for cleaning a floor comprising:

a shaft (1);

an elongated frame (2) pivotally mounted on one end of said shaft, said frame having a pair of ends (5, 14), said frame being provided at at least one end (5) with a clamping means (6) which can be moved with respect to said frame toward and away from said frame, said clamping means comprising an end part (10) having first and second ends (9, 12), said first end (9) being pivotally mounted to said frame and, a spring (11) operatively associated with said frame and end part (10) to urge the second end (12) of said end part (10) away from said frame; and

an elongated cleaning part (3) detachably affixed to said frame, said cleaning part having a pocket (7, 7') at each end thereof with a mouth and a bottom, the mouths of said pockets opening toward the center of said cleaning part and toward each other, said bottoms being opposite said mouths and adjacent the ends of said cleaning part,

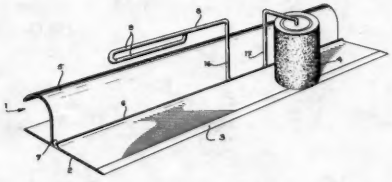
said frame being insertable into said pockets of said cleaning part by moving said second end (12) of said end part (10) toward said frame, said clamping means retaining said cleaning part on said frame when said second end of said end part (10) is moved away from said frame in said pocket by said spring (11).

4,564,970

DEVICE FOR CARRYING OUT A PAINT TOUCH UP IN A CORNER

Germain Latraverse, R.R. 3, 160 Reid St. BM 26, Drummondville (Quebec), Canada (J2B 7T4)

Filed Sep. 10, 1984, Ser. No. 648,978
Claims priority, application Canada, Jul. 3, 1984, 457977
Int. Cl.[4] B05C *17/02, 21/00*
U.S. Cl. 15—230.11 11 Claims



1. A device for carrying out a paint touch up, or a touch up of another coating applied in liquid state, in a corner formed by the intersection of two substantially planar surfaces disposed substantially at right angle with respect to each other, comprising:

a shielding part for masking a portion of a first of said two surfaces, which portion of the first surface being adjacent said corner, said shielding part including (a) a linear edge adapted to be positioned in said corner, (b) a first side facing said portion of the first surface, (c) a second side opposite to said first side, and (d) a linear groove formed on the second side of the shielding part and parallel to said linear edge;

a paint roller; and

means for handling said paint roller, said handling means including a rod having a first end on which the paint roller is mounted, said rod being bent to define a linear rod portion which is positioned into said linear groove of the shielding part in order to guide the paint roller while painting a portion of the second of said two surfaces or applying said other coating on said portion of the second surface, which portion of the second surface being adjacent said corner and contiguous to said portion of the first surface;

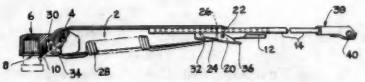
whereby, in operation, said portion of the second surface can be easily painted or coated with said other coating as the paint roller is guided through said linear groove and said linear rod portion, and that without smearing with paint or with said other coating the first surface having said portion thereof masked by the shielding part to thereby carry out said touch up.

4,564,971

WIPER EQUIPMENT

Peter C. Pethers, Winkfield; Ivan A. Duck, Chalfont St. Giles, and Malcolm A. Carter, Ashford, all of England, assignors to Trico Products Corporation, Buffalo, N.Y.

Filed Aug. 6, 1984, Ser. No. 638,079
Int. Cl.[4] B60S *1/36*
U.S. Cl. 15—250.35 6 Claims



1. A wiper arm comprising an inner retainer portion pivotable about a transverse axis on an arm head, an outer bar portion having an inner end telescopically engaging the distal end portion of said retainer portion detachably secured thereto in one position and in another position rotated through a half turn about its longitudinal center line, and having an outer end arm termination means for enabling connection to be made to a wiper blade, the bar portion being formed with at least one bend in a plane substantially parallel to the transverse axis so that the longitudinal center line of the outer end of the bar portion is not aligned with the longitudinal center line of the inner end of the bar portion; which includes cooperating latch means and keeper means on said outer bar portion for detachably and removably retaining the inner end of said outer bar portion in operative connection with said retainer portion in a position wherein said outer end of said bar portion extends at one fixed angular attitude and in another position rotated through a half turn about the longitudinal center line of the inner end wherein said outer end of the bar portion extends in another equal fixed angular attitude in an opposite direction.

4,564,972

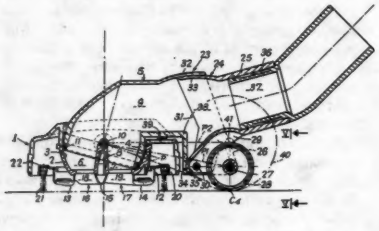
ROLLER OR SKID TYPE VACUUM CLEANER NOZZLE ATTACHMENT

Michel Varin, Crepy-en-Valois, France, assignor to Etablissements Georges Olivier, Paris, France

Filed May 15, 1984, Ser. No. 610,398
Claims priority, application France, May 17, 1983, 83 08156
Int. Cl.[4] A47L *9/06*
U.S. Cl. 15—359 11 Claims

1. A vacuum cleaner nozzle attachment comprising a casing containing a fixed sole having at least one suction opening and a moving, brush-holding plate, a rocking nozzle pivotably mounted abut a shaft in the casing such that said nozzle's

internal conduit opens onto a center duct terminating at the sole and embracing the suction opening or openings in the latter, a sleeve wherein is rotatably fitted a suction tube and which is pivotably supported by the rocking nozzle, the internal conduits of said sleeve and said tube being connected in an



airtight manner with the conduit of said nozzle, and a floor bearing part supported by the rocking nozzle at the rear of the casing, wherein said sleeve is pivotably fitted to the rocking nozzle about a shaft located between the pivot axis of said nozzle about the casing and the center line of the floor-contacting surface of the bearing part.

4,564,973

DOOR CLOSING DEVICE HAVING AN ADJUSTABLE LENGTH ARM

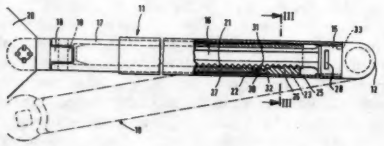
Herbert Kordes, Ennepetal, Fed. Rep. of Germany, assignor to Dorma-Baubeschlag GmbH & Co. KG., Ennepetal, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 545,732

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239062

Int. Cl.[4] E05F *1/00*

U.S. Cl. 16—71 **6 Claims**



1. A door closing device for connecting a lock shaft of a door upper lock with a door wing or door frame, comprising a main arm and an adjusting arm pivotally connected to each other said adjusting arm including an outer receiving bar and an inner adjusting bar adjustably connected to said outer bar, each other, bar and said inner bar being telescopically displaceable one relative to another, a releasable locking member for connecting said outer bar and said inner bar in any desired locked position, and a securing member for securing said inner and outer bars in said locked position, said inner bar being formed with a first toothing extending lengthwise thereof, said outer bar being formed with a cutout and having two side walls, at least one of said side walls being formed with a second toothing extending lengthwise in the region of said cutout, said first toothing corresponding to said second toothing and disposed next to the same, said locking member being disposed in said cutout and having a third toothing engageable with said first and second toothing.

4,564,974

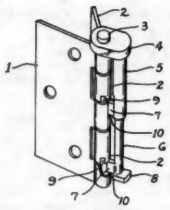
SECURITY HINGE

John F. McGrail, Suite C-197, 7701 Warner Ave., Huntington Beach, Calif. 92647, and Roger F. Kershaw, 14691 Canterbury Ave., Tustin, Calif. 92680

Filed Apr. 3, 1984, Ser. No. 596,395

Int. Cl.[4] E05D *11/10*

U.S. Cl. 16—353 **2 Claims**



1. A security hinge having two leaves each for attachment to a door and a door jamb, respectively, said two leaves having at least one knuckle through which a hinge pin may be inserted to permit rotation of the leaves about the hinge pin, the improvement comprising:

a lock pin guide attached to one end of the hinge pin containing a sleeve portion disposed in a parallel orientation to the axis of the hinge pin and laterally spaced therefrom;

a lock pin disposed within the sleeve portion of said lock pin guide and mounted for axial movement relative to said sleeve portion, said lock pin having at least one protrusion adapted to engage complementary formed vertical slots formed in said knuckles, each said protrusion being of a length such that said protrusion may be inserted in the slot formed in a first knuckle when said lock pin is in a first axial position, and may be partially contained in the slot of the first knuckle and partially contained in the slot of the second knuckle adjacent the first knuckle when the lock pin is in a second axial position, thereby preventing relative rotation of the first and second knuckles; and

means for retaining said lock pin in the second axial position.

4,564,975

HINGE HARDWARE ELEMENT FOR DOORS AND WINDOWS OF BUILDING AND FURNITURE

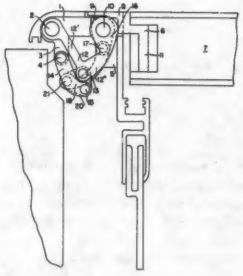
Reinhold O. Kuffner, Karlsruhe, Fed. Rep. of Germany, assignor to Kuffner Innenausbau, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 477,909

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210721

Int. Cl.[4] E05D *15/32*

U.S. Cl. 16—370 **10 Claims**



1. A hinge hardware element for building and furniture

doors and windows, which after opening 90 degrees to 180 degrees leaves the inside cross-section of the door or window opening entirely clear, having a fastening part attached to the jamb and a bearing-surface part attached to the door, which parts are connected with one another by way of a lever mechanism, said lever mechanism including in combination:

(a) first 4-bar link mechanism having a first base attached to the jamb; first and second spaced-apart parallel shafts extending from said base; a bell crank lever having a first arm pivoted at one end on said first shaft; a second lever member; a coupler; third and fourth shafts parallel to said first and second shafts, said third shaft pivotally interconnecting said coupler and the other end of said arm of said bell crank lever at the apex thereof, said fourth shaft interconnecting one end of said second lever member with said coupler, the other end of said second lever member being pivotally mounted on said second shaft; and

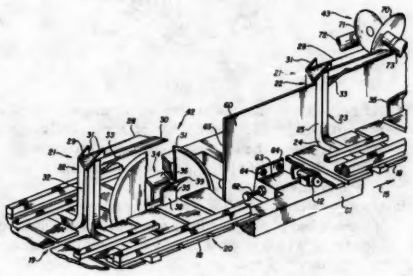
(b) a second 4-bar link mechanism having a first part for attachment to the end face of a door panel; a second base extending from said first part; fifth and sixth spaced-apart shafts mounted on said second base and extending parallel to said first and second shafts; a second arm of said bell crank lever pivotally mounted at one end on said fifth shaft, the other end of such second arm of said bell crank lever being in common with the other end of the first arm of said bell crank lever at the apex thereof; a swing arm member pivotally mounted at one end on said sixth shaft; a seventh shaft pivotally interconnecting the other end of said swing arm member and said coupler; wherein said bell crank lever interconnects said first and second 4-bar link mechanisms; wherein said third, fourth, and seventh shafts are arranged on said coupler in the corners of a triangle; and wherein said lever mechanism, in the closed state of the door, is mounted in a recess in the jamb or the end face of the door with the interrelationship of the various levers and pivots being such that such parts of said lever mechanism emerge only at right angles to the door opening of the jamb.

4,564,976

APPARATUS FOR PROCESSING POULTRY BREASTS

Jeffrey A. Beech, Tucker, and John N. Penprase, Marietta, both of Ga., assignors to Pritchard Sales Company, Inc., Atlanta, Ga.

Filed Apr. 9, 1984, Ser. No. 598,182
Int. Cl.[4] A22C *21/100*
U.S. Cl. 17—11 **2 Claims**



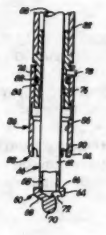
1. An apparatus for successively severing poultry carcasses longitudinally into halves comprising conveyor means including a pair of conveyors mounted in spaced, side-by-side relationship for movement in unison along parallel paths that straddle an upright plane and which pass in sequence through a carcass loading station, a breast cutting station, a back cutting station and a delivery station, a rotary breast cutting disc positioned at said breast cutting station and protruding upwardly between said pair of conveyors and located in said upright plane, said conveyor means further including a plurality of poultry carcass mandrels mounted at intervals along and extending upwardly from said conveyors, said mandrels each being bifurcated and straddling said plane and movable over said rotary breast cutting disc, back cutting means positioned at said back cutting station over the path of movement of said mandrels, and a separator plate positioned in an upright attitude and protruding upwardly between said conveyors in said upright plane, said separator plate extending from adjacent said breast cutting disc to a position beyond said back cutting means, whereby poultry carcasses are mounted at the loading station on the mandrels by positioning the previously eviscerated body cavity of a carcass about a mandrel with the back of the carcass resting on the mandrel and the breast of the carcass suspended below the mandrel, the mandrels carry the carcasses through the breast cutting station where the cutting disc cuts upwardly through the breasts of the carcasses, the cut through the breasts of the carcasses move about the separator plate and the separator plate maintains the breast halves separate as the carcasses move on the mandrels from the breast cutting station to the back cutting station where the back cutting means cuts downwardly through the backs of the carcasses as the separator plate maintains the breast halves separate, and the carcass halves are separately discharged at the delivery station.

4,564,977

POULTRY VENT REMOVAL MACHINE

Donald J. Scheier, Kansas City, Mo., and Jack L. Hathorn, Springdale, Ark., assignors to Simon-Johnson, Inc., Kansas City, Kans.

Filed Sep. 15, 1983, Ser. No. 532,575
Int. Cl.[4] A22C *21/06*
U.S. Cl. 17—11 **11 Claims**



1. In a machine for severing the vent from a poultry carcass or the like, the improvement comprising:

an elongated probe adapted for entering the vent and intestine of a carcass to be processed;

a generally cylindrical cutter coaxially receiving said probe and having cutting means adjacent one end extremity;

means for rotating said cutter relative to the probe about the common axis of the probe and cutter;

means for relatively telescoping said probe and the cutter such that the probe is alternately projected outwardly from said cutter beyond said cutting means and withdrawn into the cutter to a retracted position relative to the cutting means; and

means for controlling said relative telescopic and rotary movements of the probe and cutter such that the probe enters the intestine when the probe is in its projected position, the probe pulls the end portion of the intestine into the cutter during relative retraction of the probe, and the cutter thereupon rotates while the probe is in its retracted position whereby to sever the skin surrounding the vent from the remainder of the carcass,

said probe having an enlargement at the intestine-engaging end thereof provided with a radially outermost, longitudinally extending surface disposed in closely spaced, mutually opposed relationship with the proximal inner surface of the cutter when the probe is in its retracted position,

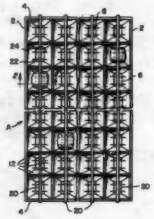
said surfaces extending in substantial parallelism with one another and being operable to forcibly grip the intestine therebetween and thereby retain the same on the probe during rotation and severance by the cutter.

4,564,978

CRAB BODY SUPPORTING MEANS FOR A VIBRATORY TYPE MACHINE FOR REMOVING EDIBLE MEAT

Theodore S. Reinke, Kennett Square, Pa., assignor to Sea Savory, Inc., Wingate, Md.

Filed Apr. 27, 1984, Ser. No. 604,971
Int. Cl.[4] A22C *29/00*
U.S. Cl. 17—71 **3 Claims**



1. A core box for supporting prepared crab bodies in a machine for removing the crab meat by vibration, the core box having an upper surface and a bottom surface containing a plurality of discharge openings each of which is defined by the lower edges of downwardly converging walls the facing surfaces of which above each opening being spaced sufficiently to support a full size prepared crab body after being cooked, the carapace, claws and flippers removed, and the visceral cavity cleaned,

and means for modifying the core box to permit partial crab bodies to be supported on the converging walls above each opening, comprising

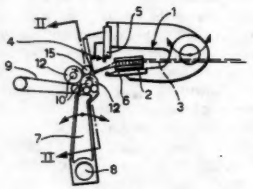
a rod supported on the upper surface of the core box and extending across the center of at least one opening in the bottom surface of the core box, and having at least one pair of pins extending from each side of the rod with the ends of the pins resting on the converging surfaces of the walls above the opening whereby the pins and converging wall surfaces form a support for a partial crab body.

4,564,979

COMBING MACHINE FOR TEXTILE FIBRES

Carlo Ramasco, Sesto Calende, Italy, assignor to Sant' Andrea Novara Officine Meccaniche e Fonderie, Novara, Italy

Filed Jun. 8, 1984, Ser. No. 618,860
Claims priority, application Italy, Jun. 9, 1983, 53444/83[U]
Int. Cl.[4] D01G *19/00*
U.S. Cl. 19—215 **1 Claim**



1. A combing machine for textile fibres, comprising:

means for combing a sliver of fibres;

a pivotable carriage;

contra-rotating tearing rollers mounted on the carriage;

respective contra-rotating shafts on which said support tearing rollers are mounted said shafts being rotatably supported at their ends by the pivotable carriage, said rollers being effective to tear successive tufts from the sliver of fibres as the tufts are combed, and partially to superimpose the torn tufts on each other so as to form a continuous combed web,

wherein the improvements consist in

support means on the pivotable carriage for rotatably supporting each support shaft for the tearing rollers intermediate the ends of said shaft, and

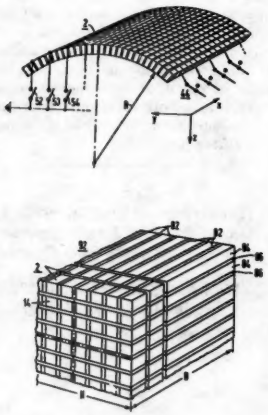
each support shaft carries two said tearing rollers disposed on opposite sides of said support means cooperating with a corresponding pair of said tearing rollers mounted on opposite sides of said support means on a respective said contra-rotating support shaft.

4,564,980

ULTRASONIC TRANSDUCER SYSTEM AND MANUFACTURING METHOD

Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 267,583, May 27, 1981, Pat. No. 4,437,033.
This application Feb. 17, 1983, Ser. No. 467,240
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021449
Int. Cl.[4] H04R *17/00*
U.S. Cl. 29—25.35 **1 Claim**



1. A method for manufacturing an ultrasonic transducer arrangement comprising a plurality of acoustically separate transducer elements, the method comprising the steps of:

stacking a plurality of plates of ultrasonic oscillator material on one another;

interposing a layer of filler material between adjacent ones of the stacked plates, said filler material having an acoustic impedance which is substantially different from an acoustic impedance of said ultrasonic oscillator material;

bonding said filler material to adjacent ones of said stacked plates;

forming a plurality of first plate-shaped bodies by creating a plurality of cuts in a direction perpendicular to a stacking plane of said stack;

stacking said formed first plate-shaped bodies on one another;

interposing a thin intermediate layer of filler material between adjacent ones of the stacked first formed bodies, said filler material having an acoustic impedance which is

substantially different from said acoustic impedance of said ultrasonic oscillator material of said plates;

bonding said filler material to adjacent ones of said stacked first formed bodies;

forming at least one second plate-shaped body comprising said plurality of acoustically separate transducer elements by cutting said stacked first bodies in a direction perpendicular to a stacking plane of said stack of first formed bodies, said second plate-shaped body having first and second flat sides formed by cutting said stacked first bodies, said flat sides comprising end faces of said acoustically separate transducer elements;

metallizing the end faces of said acoustically separate transducer elements which lie in said first and second flat sides; and

connecting conductor means to adjacently arranged metallized end faces of said acoustically separate transducer elements in rows along a first direction of one of said flat sides and in columns along a second direction of the other of said flat sides perpendicular to the first direction to form ultrasonic oscillators comprising rectangular shaped groups of said transducer elements in said transducer arrangement.

4,564,981

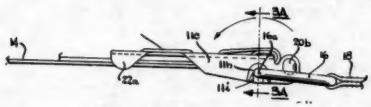
BUCKLE-STRAP TIEDOWN ASSEMBLY

Howard T. Knox, Simi, Calif., assignor to ANCRA Corporation, El Segundo, Calif.

Filed Jun. 25, 1984, Ser. No. 624,409

Int. Cl.[4] A44B *11/12, 21/00*

U.S. Cl. 24—68 CD **4 Claims**



1. A buckle assembly for tightening and securing a pair of straps or the like around a load to be retained in place comprising:

a frame member having a generally elongated flat central piece and a pair of opposing legs which extend normally from opposite edges of said central piece, said legs having oppositely positioned apertures formed therein towards one end thereof and detents or protrusions extending outwardly from said legs at a position therealong between said apertures and said one end thereof, and

a resilient generally U-shaped bale member having turned in end portions, said end portions being fitting into the apertures of the frame legs to pivotally support the bale member thereon,

one of said straps being fixedly retained on the bale member, the other of said straps being retained on the central piece of the frame member for adjustment relative thereto,

the frame member being moveable between a "tension" position with the bale on one side of said detents and a "release" position with the bale on the other side of said detents.

4,564,982

CLASP FOR A BRACELET OR THE LIKE

Jean Paolini, La Chaux-de-Fonds, Switzerland, assignor to Fabrique Ebel SA, Switzerland

Filed Jul. 18, 1984, Ser. No. 632,032

Claims priority, application Switzerland, Feb. 23, 1984, 891/84

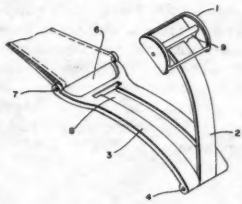
Int. Cl.[4] A44B *21/00*

U.S. Cl. 24—71 J **5 Claims**

1. A clasp for a bracelet or the like comprising:

(a) first and second arms, each arm having two ends, the arms being hinged to each other at a pair of corresponding ends for pivotal movement between open and closed positions;

(b) a buckle carried by the unhinged other end of the first arm, the buckle being configured to receive a first strap therethrough and adjustably fix one end of the first strap therein, whereby the free end of the first strap extends from the buckle;



(c) means carried by the unhinged other end of the second arm for securing a second strap thereto; and

(d) the second arm including an opening through which the free end of the first strap may be received and concealed under the second strap when the first and second arms are disposed in the closed position.

4,564,983

DEVICE FOR FASTENING A BELT OR THE LIKE

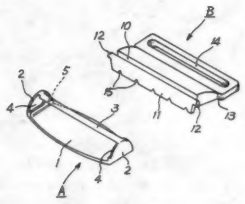
Koji Saito, Tokyo, Japan, assignor to Kohshoh Limited, Kyoto, Japan

Filed Feb. 3, 1984, Ser. No. 576,946

Claims priority, application Japan, Feb. 4, 1983, 58-15086[U]; Apr. 8, 1983, 58-61945

Int. Cl.[4] A44B *19/00*

U.S. Cl. 24—170 **6 Claims**



1. A device for fastening a belt or the like, comprising a first component member and a second component member connected to said first component member for pivotal movement relative thereto;

said first component member comprising a base plate, a pair of upstanding side walls formed at opposite sides of said base plate, and a cross rod having opposite ends connected to the integral with top ends of said side walls so that said base plate, said side walls and said cross rod form a frame defining a passage through which a belt or the like is to be passed, each of said side walls being provided with a bearing recess in an inner surface thereof said recess extending from a periphery of each of said side walls inwardly thereof;

said second component member comprising a body portion and a fastening portion extending angularly from one end of said body portion, said body portion being provided at said one end with a pair of pintles axially aligned and laterally outwardly projecting in opposite directions from the opposite lateral sides of said body portion and in an

upper surface of said body portion with a bearing groove extending adjacent said one end of said body portion and in parallel with a common axis of said aligned pintles, and said body portion being further provided at an opposite end with a slot for attachment of a belt to said second component member;

said first and second component members, when assembled, having each of said pintles engaged in a corresponding one of said recesses and said cross rod engaged in said bearing groove of said body portion upper surface so that said second component member is pivotable about said cross rod between a substantially upright or open position in which said belt can freely pass through said passage of said first component member and a substantially flat or closed position in which said fastening portion of said second component member fastens said belt to said first component member.

4,564,984

POSITIONING CONE FOR CONTAINERS

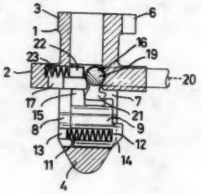
Hiroyuki Taksguchi, Nagasaki, Japan, assignor to Taiyo Seiki Iron Works Co., Ltd., Osaka, Japan

Filed Aug. 10, 1983, Ser. No. 521,918

Claims priority, application Japan, May 23, 1983, 58-78530[U]

Int. Cl.[4] B65D *21/02*

U.S. Cl. 24—287 4 Claims



1. A cone for positioning containers, comprising:

a body having a first flange and a second flange and being divided by said flanges into an upper shank and a lower shank whereby the upper shank is engaged within an aperture in an upper cargo container and the lower shank is engageable within an aperture in a lower cargo container for relative positioning of the containers, said lower shank having a conical surface on its bottom and also having a hole extending laterally therethrough;

a latch slidably supported in the hole, said latch having a first position retracted in the hole, and a second position protruding from the hole whereby the lower shank is operatively secured within the aperture in the lower cargo container;

a spring means, positioned inside the hole between the latch and the lower shank, for urging the latch into the second position;

lever means, pivotably supported in the body, for moving the latch from the second position to the first position;

first lug means, connected to the lever means, for securely keeping the latch in the first position;

second lug means, connected to the latch, for engaging with the first lug means; and

handgrip means, connected to the lever means and extending outside of the body, for turning the lever means.

4,564,985

FELT FOR PAPER MANUFACTURE AND METHOD FOR PRODUCING THE SAME

Takeo Tanabe, Kounosu, Japan, assignor to Nippon Felt Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1982, Ser. No. 433,419

Claims priority, application Japan, Oct. 8, 1981, 56-160765

Int. Cl.[4] D06C *3/00*

U.S. Cl. 28—142 7 Claims

1. A method for producing a felt for paper manufacture, which comprises subjecting at least two endless non-compressible fabrics having at least one of a single weave or double combination weave structure to stretching and setting so that the endless non-compressible fabrics are thermally set under such a tension as will keep a substantially equal length in the fabrics, piling the fabrics in the annular form to form a ground fabric, placing a lap on said ground fabric, and needling the lap placed on the ground fabric while travelling the ground fabric under such a tension that all the layers are kept strained, whereby the lap is combined with the surface of the ground fabric and the endless non-compressible fabrics are also combined with each other.

4,564,986

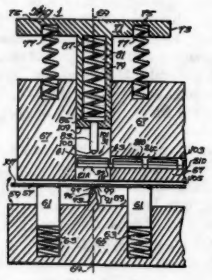
APPARATUS FOR SECUREMENT OF CLINCH NUT TO CARRIER MATERIAL

Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 25, 1982, Ser. No. 436,560

Int. Cl.[4] B23P *11/00;* F16B *39/282*

U.S. Cl. 29—33 K 1 Claim



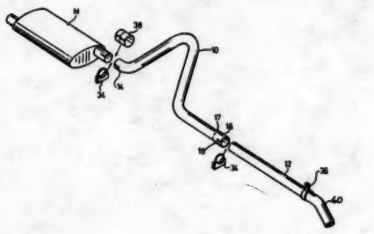
1. An apparatus for securing a nut to carrier material comprising: a first punch, a housing for retractably carrying said first punch outwardly from one end of said housing, a nut guide with a pair of intersecting passageways for receiving nuts, said housing being slideably disposed within one of said passageways, a second punch, and a base carrying said second punch, second spring means for urging said nut guide toward said carrier material, and spring loaded carrier support means holding said carrier material in an initial position adjacent said second punch.

4,564,987

METHOD FOR MANUFACTURING A TAIL-PIPE REPLACEMENT KIT

Peter Roberts, Mississauga, Canada, assignor to Thrush Incorporated, Rexdale, Canada

Division of Ser. No. 371,230, Apr. 23, 1980, Pat. No. 4,441,579.
This application Apr. 5, 1984, Ser. No. 597,101
Int. Cl.[4] B21D *39/00*
U.S. Cl. 29—157 R 13 Claims



1. A method for manufacturing a tail-pipe kit suitable for attachment to a muffler and for use with a plurality of vehicles, comprising the steps of:

(a) identifying a plurality of vehicles having overlapping spatial envelopes in at least the rear axle section of the plurality of vehicles;

(b) forming a tubular arched section of a first length with an inlet end for connection to the muffler, an intermediate portion having an arch conforming to the overlapping spatial envelopes and an outlet end; and

(c) forming a tubular spout section separate from said tubular arched section and having an inlet end and an outlet end, the inlet end being connectible in gas flow relationship with the outlet end of the tubular arched section,

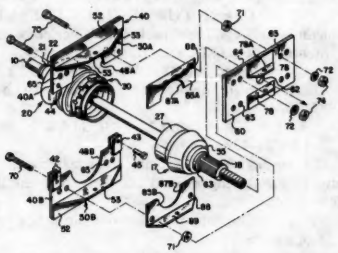
wherein said separate tubular spout section has an axial length which is substantially equal to the first length and at least equal to the longest spout section of said plurality of vehicles.

4,564,988

APPARATUS FOR FITTING A BOOT TO A UNIVERSAL JOINT

Lutro Norrod, 3137 Hobart Ave., Kettering, Ohio 45429

Filed Sep. 17, 1984, Ser. No. 651,132
Int. Cl.[4] B23P *19/02*
U.S. Cl. 29—235 4 Claims



1. A tool for press fitting a circular end of a flexible boot onto a cylindrical surface on the inner end of the outer race of a constant velocity joint using an endless band clamp which has a major portion with an inner diameter greater than the circumference of the cylindrical surface and being less than the outer diameter of the end of the boot, the clamp being fitted to the circular end of the boot,

said tool comprising

a multi-part main plate member having at least two parts which cooperate to define a circular aperture of a diameter less than the outer diameter and greater than the inner diameter of the major portion of the band clamp and also greater than the outer diameter of the end of the boot,

means for releasably retaining said parts of said main plate member together whereby said parts can be separated to set main plate member around the end of the boot and then joined,

means for pressing said main plate member coaxially and uniformly along the cylindrical surface of the outer race to force the band clamp and the end of the boot fitted thereto onto said surface and simultaneously to compress the end of the boot into tight sealing engagement with the surface of the outer race,

said means for pressing including a secondary plate member having a central opening therethrough locateable on the outer race and means cooperating therewith supporting said main plate member in position with said aperture surrounding the band clamp and spaced from adjacent parts of the boot, and means for moving said main plate member and the outer race toward each other.

4. A tool for press fitting a circular end of a flexible boot onto a cylindrical surface on the inner end of the outer race of a constant velocity joint using an endless band clamp having a major portion of U-shape in cross-section and being greater in diameter than the circumference of the surface and less than the outer diameter of the end of the boot, said major portion embracing a rib on the end of the boot, and the clamp having an integral tip dimensioned to be press fit onto the surface,

said tool comprising

a main multi-part plate member having a circular aperture of a diameter less than the outer diameter and greater than the inner diameter of the major portion of the band clamp and also greater than the outer diameter of the end of the boot,

means locateable coaxially around said outer race opposite the cylindrical surface for supporting and locating said main plate member on the inner end of the outer race coaxially therewith and in position fitted around the end of the boot with a clearance and engaging a side of the band clamp, and

means for pressing said main plate member coaxially and uniformly along the cylindrical surface of the outer race while moving said main plate member and said supporting and locating means toward each other to force the band clamp and the end of the boot fitted thereto onto said surface, and to compress the end of the boot into tight sealing engagement with the surface of the outer race, without pinching the boot between the plate member and the surface.

4,564,989

DEVICE FOR INSERTING AND REMOVING TUBES FROM STOPPERS

Franklin Sogandares, Dallas, Tex., assignor to Southern Methodist University, Dallas, Tex.

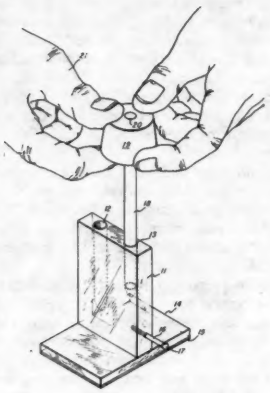
Filed Aug. 20, 1980, Ser. No. 179,749
Int. Cl.[4] B23P *19/02*
U.S. Cl. 29—235 3 Claims

1. A device for inserting a tube into an opening through a resilient stopper, comprising:

(1) a body member having a hole therein shaped to accommodate insertion of said tube; said hole having a diameter somewhat larger than the tube diameter, and a depth substantially less than the length of said tube; whereby the tube, when inserted therein, extends therefrom a distance equal to or greater than the desired insertion distance into or through said stopper;

(2) means for stabilizing said body member on a supporting

surface, so that it cannot readily tip over or slide during use; and



(3) means for assisting in the removal of said tube from said stopper, comprising a rigid member in combination with said body and base, extending outwardly therefrom, and having a diameter substantially equal to that of said tube.

4,564,990

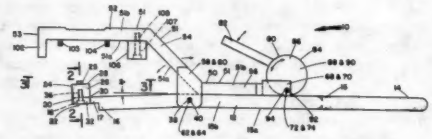
LEVER WRENCH FOR SNAP FIT VALVES

Richard A. Rible, 251 Morris Ave., Brick Town, N.J. 08723

Filed Feb. 16, 1984, Ser. No. 580,845

Int. Cl.[4] B23P *19/04*

U.S. Cl. 29—267 **1 Claim**



1. A lever wrench for the assembly and disassembly of snap-fit valves which comprises

a first lever arm, substantially linear in shape, said first lever arm having a handle and a contact end, said contact end obliquely angled from said handle end;

a cylindrical punch pin having a planer upper surface and an aligning tooth centrally positioned thereon removably secured to said contact end of said first lever arm;

a second lever arm rotatably mounted to said first lever arm and including a first leg and a second leg, said first leg including a pair of rectangular depending contact points positioned at the outer end and the inner end of said first leg, said rectangular depending contact points in alignment with said first lever arm and said punch pin for cooperation with said first lever arm and said punch pin for the disassembly of said snap-fit valve, and a pair of depending concave contact points positioned between said depending rectangular contact points on said first leg of said second lever arm for cooperation with said punch pin for the assembly of said snap-fit valve;

a third lever arm rotatably secured to said second leg of said second lever arm and comprised of a handle secured to a disc whereby rotation of said third lever arm causes said first lever arm to rotate with respect to said second lever arm thereby to cause said punch pin to cooperate with said contact points to affect the assembly and disassembly of the snap-fit valve.

4,564,991

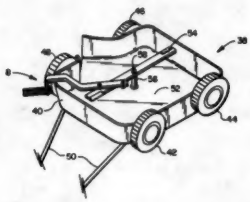
TOOL FOR HOLDING A BLADE FOR INSTALLATION AND REMOVAL THEREOF

Harold E. Taylor, 4196 Riverside Dr., Columbus, Ohio 43220

Filed Oct. 22, 1984, Ser. No. 663,355

Int. Cl.[4] B23P *19/00, 19/04;* **B23Q** *3/00*

U.S. Cl. 29—426.5 **6 Claims**



1. A tool for holding a lawnmower blade for installation and removal thereof, which comprises an elongate lever having a handle at one end, a blade engaging section about the other end, and a channel therebetween for accommodating the housing of a lawnmower, said blade engaging section comprising a pair of spaced-apart, adjustably mounted stop pins for preventing rotational movement of the lawnmower blade placed therebetween, said stop pins having inwardly-facing retaining heads spaced-apart from said elongate lever for preventing the lawnmower blade from slipping off said stop pins.

6. A method for holding a lawnmower blade for installation or removal of said lawnmower blade from a lawnmower, which comprises holding the lawnmower blade in a blade engaging section of a tool which comprises an elongate lever having a handle at one end, said blade engaging section about the other end, and a channel therebetween for accommodating the housing of the lawnmower, said blade engaging section comprising a pair of spaced-apart, adjustably mounted stop pins for preventing rotational movement of the lawnmower blade placed therebetween, said stop pins having inwardly-facing retaining heads for preventing the lawnmower blade from slipping off said stop pins; and

tightening or loosening a retaining nut for installation or removal, respectively, of said lawnmower blade from said lawnmower.

4,564,992

METHOD FOR PRODUCING HELIX STRUCTURES FOR USE IN FORMING HELIX BELTS

Johannes Lefferts, LM-Enschede, Netherlands, assignor to Siteg Siebtechnik GmbH, Fed. Rep. of Germany

Filed Jul. 13, 1983, Ser. No. 513,279

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1982, 3228033

Int. Cl.[4] B23P *11/00*

U.S. Cl. 29—429 **6 Claims**

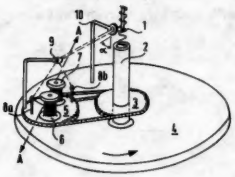
1. A method for introducing filler material into a helix structure for producing a filled helix of great length, the method comprising:

advancing the helix in a direction along the longitudinal axis of said helix;

introducing filler material into the helix between the windings of the helix at the point at which the helix and filler material converge;

orbiting the helix and the filler material about one another at a position preceding the point at which the helix and filler material converge, while the helix is kept from rotating about its longitudinal axis; and

adjusting the advancing motion of the helix and the speed at which the filler material and the helix orbit about one



another so that the helix is advanced by one winding of the helix during each orbit of the filler material and the helix about one another.

4,564,993

DOUBLE NUT AND METHOD OF FORMING THE DOUBLE NUT

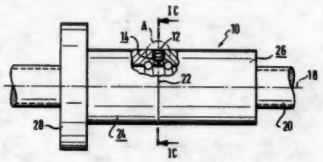
Günter Blaurock, Niederwerrn; Ernst Albert, Sand/Main; Werner Blaurock, Niederwerrn; Benno Peichl, Bergrheinfeld; Klaus Reichert, Bad Kissingen-Garitz; Hans-Georg Stender, Hambach, and Rudolf Schlereth, Frauenroth, all of Fed. Rep. of Germany, assignors to Deutsche Star Kugelhalter GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,193

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207566

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—434 **10 Claims**



1. Method of forming a preloaded double-ball nut running on a threaded spindle, said double nut comprising a pair of individual ball nuts running on balls on said threaded spindle, the method including:

(a) mounting said pair of individual nuts on said balls on said threaded spindle;

(b) rotating one of said individual nuts relative to the other such that a desired preload is obtained, said preload pressing said individual nuts together, said individual nuts being in mutual contact in a contact plane;

(c) drilling a radially extending recess in the contact plane said recess extending in both of said preloaded individual nuts;

(d) inserting a locking member into said recess whereby said locking member secures said individual nuts under said preload and against rotation of one of said individual nuts relative to the other.

4,564,994

MULTIPLE PLATE CLUTCH ORIENTING FIXTURE AND METHOD OF USING

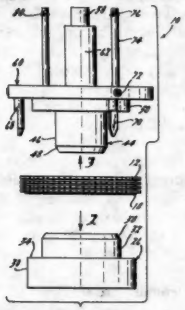
John J. Marx, Warren, Mich., assignor to Fraser Automation, Sterling Heights, Mich.

Filed Oct. 21, 1983, Ser. No. 544,081

Int. Cl.⁴ B23Q *3/00*

U.S. Cl. 29—468 **3 Claims**

1. A fixture for orienting clutch plates having radially projecting teeth, said clutch plates forming part of a multiple plate clutch or brake assembly comprising: a base member forming first and second diameter portions, said first diameter portion substantially larger than the second diameter portion and forming a shoulder portion therebetween, said base member having a central bore, said first diameter portion having axially extending cutout portions extending to said shoulder, a mandrel having an annular body portion slidably fitting within said base member central bore, a flange attached to said body portion and a central post, said flange forming a pair of opposing bores located at a radially intermediate position, a fixture plate member having a sleeve slidable on said mandrel center post, said



fixture plate member carrying a plurality of clutch plate engaging posts and two or more bores, said clutch plate engaging posts forming pointed ends and being positioned radially to engage said clutch plates teeth for effecting axial alignment of said teeth of a stack of said clutch plates when said fixture plate assembly is driven toward said base, and two or more plate emgaging posts fitting within said fixture plate bores, said plate engaging posts having means for engaging said clutch plates, said plate engaging posts being slidable and rotatable within said flange bores for bringing said pins selectively into engagement with said clutch plates.

4,564,995

COMPOSITE MACHINE TOOL

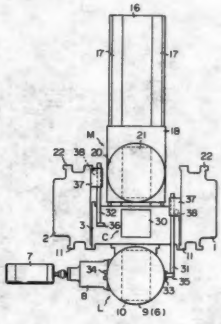
Hiroshi Kase, Takatsuki, Japan, assignor to O-M Limited, Osaka, Japan

Continuation of Ser. No. 466,869, Feb. 16, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 714,055

Claims priority, application Japan, Feb. 26, 1982, 57-30832

Int. Cl.⁴ B23Q *39/02*

U.S. Cl. 29—563 **2 Claims**



1. A composite machine tool comprising:

a pair of vertical columns disposed at a predetermined distance from each other;

a stay disposed between lower ends of said vertical columns and connected therebetween;

an independently operable lathe having a rotary table and a movable cutting tool, provided on front sides of said vertical columns;

a first cross rail vertically movable along the front surfaces of said vertical columns and provided with a tool post for the lathe;

an independently operable machining center type machine tool having an indexing table and cutting tools, provided on the rear sides of said vertical columns;

a second cross rail vertically movable along the rear surfaces of said vertical columns and provided with a tool post for the machining center type machine tool; and

a pallet transfer apparatus disposed between the lathe and machining center type machine tool and between the vertical columns for conveying a succession of pallets with workpieces thereon, said transfer apparatus comprising:

an intermediate table fixedly mounted on said stay, actuating bars horizontally disposed between said intermediate table and inside surfaces of said vertical columns, and movable along the longitudinal axis of the composite machine tool;

upper surfaces of the rotary table, intermediate table, and indexing table being located at substantially the same level;

turnable hook members provided on the front ends of said acutating bars, said hook members being adopted to be engaged or disengaged from socket members fixed to opposite sides of said pallet; and

drive means for driving said bars back and forth,

wherein engagement between said hook members and socket members on each pallet and succeeding movement of said actuating bars after the machining by the lathe for the workpiece on the pallet is finished, causing the pallet and the workpiece thereon to be conveyed from the rotary table of the lathe to the intermediate table between said columns, and thereafter from the interemdiate table to the indexing table of the machining center machine tool.

4,564,996

APPARATUS FOR WORKING ON LEADS OF ELECTRONIC COMPONENTS

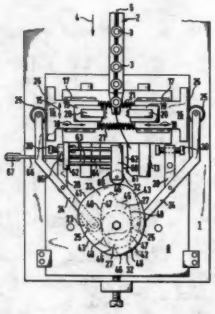
Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,409

The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.

Int. Cl.⁴ B21F *1/00*

U.S. Cl. 29—566.3 **17 Claims**



1. An apparatus for working on leads of components, the apparatus comprising a component supply means, at least one tool group including at least two tools, a first drive means for moving said tool group toward and away from said component supply means, a second drive means for moving said at least two tools towards and away from each other, and limiting means for at least decreasing an amount of movement of said tool group toward and away from said component supply means.

4,564,997

SEMICONDUCTOR DEVICE AND MANUFACTURING PROCESS THEREOF

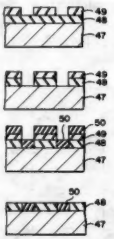
Seitaro Matsuo; Susumu Muramoto, both of Hachioji; Kohei Ehara, Kodaira, and Manabu Itsumi, Hoya, all of Japan, assignors to Nippon-Telegraph and Telephone Public Corporation, Japan

Filed Apr. 16, 1982, Ser. No. 369,235

Claims priority, application Japan, Apr. 21, 1981, 56-61066; Apr. 21, 1981, 56-61067; Apr. 21, 1981, 56-61068; Apr. 21, 1981, 56-61069

Int. Cl.⁴ H01L *21/76, 21/302*

U.S. Cl. 29—576 W **6 Claims**



1. A semiconductor device manufacturing process comprising the steps of:

forming a resist pattern on the surface of a semiconductor substrate;

cutting a groove in an exposed area of the semiconductor substrate which is not covered with the resist pattern, through a dry etching technique with directionality using the resist pattern as a mask;

converting a first gas into a plasma under an electron cyclotron resonance condition, by using microwaves, in a divergent magnetic field the intensity of which diminishes toward a specimen table in a specimen chamber, and in a plasma generating chamber, leading the plasma-converted first gas along the magnetic field into the specimen chamber adjacent the plasma generating chamber, converting a second gas introduced into the specimen chamber into a plasma by the plasma-converted first gas and applying the plasma-converted first and second gases along the magnetic field to the semiconductor substrate on the specimen table in a direct direction substantially perpendicular thereto, thereby to form a high-density insulating film of excellent directionality in the groove and on the resist pattern to a thickness substantially equal to the depth of the groove, without heating the semiconductor substrate from the outside; and

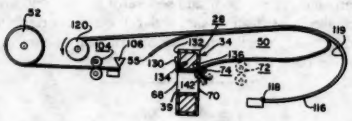
removing the resist pattern and the insulating film formed thereon to thereby obtain a structure in which only the groove is filled with the insulating film.

4,564,998

COIL WINDING METHODS AND APPARATUS

Dale O. Perschka, Nicholson, Ga., and Stuart L. Rieben, Mt. Lebanon Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1984, Ser. No. 662,653
Int. Cl.[4] H01F *41/12*
U.S. Cl. 29—605 8 Claims



5. A method of winding an electrical conductor through the window and about the leg of the magnetic core for making a core-coil assembly, comprising the steps of:

providing an electrical conductor having a lead end,

directing the lead end of the conductor through the window of the magnetic core from an entrance to an exit side thereof,

advancing the conductor via a single set of drive rolls to provide a desired conductor length,

shearing the conductor to said desired length to provide a tail end,

securing the tail end of the conductor to the magnetic core,

pressing the conductor tightly against the magnetic core with a single set of ironing rolls, adjacent to the exit side of the window,

operating said single set of drive rolls to tension said conductor,

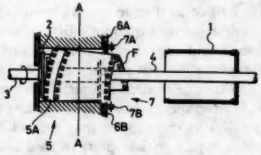
and wrapping the conductor tightly against the magnetic core with said single set of ironing rolls, from the exit to the entrance side, while the conductor is being tensioned by said single set of drive rolls.

4,564,999

FILM HANDLING MECHANISM

Kaoru Uchiyama, and Koji Ichikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1984, Ser. No. 625,757
Claims priority, application Japan, Jul. 29, 1983, 58-139693
Int. Cl.[4] B23P *19/04*; B65H *75/02*
U.S. Cl. 29—806 6 Claims



1. A film handling mechanism for receiving a film and a spool removed from a cartridge and forwarding said film to a following film processing station, comprising:

a film receiver for receiving said film removed from said film cartridge, said film receiver having first and second sides and receiving said film from said first side thereof, said film receiver having an inside diameter;

film guide members provided on said first side of said film receiver and movable between a first position in which said film guide members form a film receiving opening having a diameter substantially equal to said inside diameter of said film receiver when said film receiver is receiving a film and a second position for holding said spool of said film at one end after said film has been received by said film receiver; and

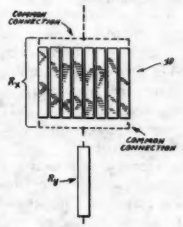
means for moving said film guide members between said first and second positions.

4,565,000

MATCHING OF RESISTOR SENSITIVITIES TO PROCESS-INDUCED VARIATIONS IN RESISTOR WIDTHS

Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Sep. 24, 1982, Ser. No. 423,255
Int. Cl.[4] H05B *3/00*
U.S. Cl. 29—611 6 Claims



1. In the art of making integrated-circuit chips having resistors thereon, a method of controlling the resistance ratio between a first resistor and a second resistor on the integrated-circuit chip, wherein said first resistor if formed as a single element would have a sensitivity of resistance change due to changes in width which is substantially less than the corresponding sensitivity of said second resistor, said resistance ratio being controlled by matching the sensitivity of said first resistor to changes in resistance due to changes in width to the corresponding sensitivity of said second resistor by a process comprising the step of:

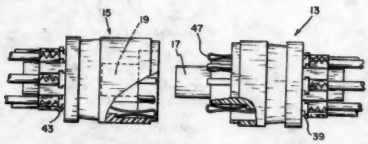
dividing said first resistor into a plurality of parallel-connected sections having a total width providing the same resistance as said single element but an increased number of side edges relative to said single element, the increase in number of said edges being proportional to the ratio of said sensitivities of said second resistor and said single element resistor, such that the composite sensitivity of said parallel-connected resistor sections is increased relative to said single element and made at least substantially equal to said sensitivity of said second resistor.

4,565,001

METHOD OF MAKING CRIMP CONNECT TERMINALS

Roy A. Patton, 204 W. Howard Ave., Visalia, Calif. 93277

Filed May 18, 1984, Ser. No. 612,032
Int. Cl.[4] H01R *43/04*
U.S. Cl. 29—866 3 Claims



1. The method of providing a plurality of terminals from an elongated strip of terminal stock material and connecting those terminals to respective insulated lead wires preparatory to disposing the terminals in a multiconductor connector assembly comprising the steps of:

blank forming terminal silhouettes in the stock material without severing individual terminals from the strip, the blank formed terminal silhouettes being elongated in a direction transverse to the elongation of the strip, and having first free end portions for selective sliding connection with other terminals in the connector assembly and second interconnected end portions for crimping connection to respective lead wires;

shaping the second end portions into a "U" configuration to receive lead wires;

crimp connecting respective lead wires and corresponding terminals;

separating crimp connected terminals one from another, and

disposing the crimp connected terminals and corresponding lead wires in connector assemblies,

perforating the terminal second end portions prior to the step of shaping to form pointed projections for piercing wire insulation and making electrical connection with lead wires during the step of crimp connecting.

2. The method of providing a plurality of terminals from an elongated strip of terminal stock material and connecting those terminals to respective insulated lead wires preparatory to disposing the terminals in a multiconductor connector assembly comprising the steps of:

blank forming terminal silhouettes in the stock material without severing individual terminals from the strip, the blank formed terminal silhouettes being elongated in a direction transverse to the elongation of the strip, and having first free end portions for selective sliding connection with other terminals in the connector assembly and second interconnected end portions for crimping connection to respective lead wires;

shaping the second end portions into a "U" configuration to receive lead wires;

crimp connecting respective lead wires and corresponding terminals;

separating crimp connected terminals one from another; and

disposing the crimp connected terminals and corresponding lead wires in connector assemblies,

selectively precipitation hardening the terminal first end portions to enhance the resilience thereof while maintaining the second end portions more malleable.

4,565,002

METHOD OF FORMING A SEPARATOR FOR A CYLINDRICAL BATTERY

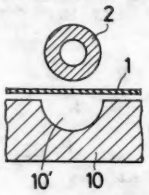
Setsuo Matsuo; Noboru Nakanome, both of Sumoto, and Koji Nishishita, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 12, 1984, Ser. No. 588,543

Claims priority, application Japan, Mar. 16, 1983, 58-43918; Jun. 16, 1983, 58-108590; Jul. 6, 1983, 58-123905; Jul. 8, 1983, 58-106964[U]

Int. Cl.⁴ H01M *6/00*

U.S. Cl. 29—623.4 **5 Claims**



1. A method for forming a separator for a cylindrical battery having a cylindrical electrode comprising the steps of:

disposing a belt-shaped separator having at least one layer on a metal mold having a circular groove therein, said separator having a length longer than a length of said electrode;

disposing said electrode over said groove;

pushing said electrode into said groove to contact a first portion of said electrode to a first portion of said separator;

pressing remaining portions of said separator not contacting said electrode to remaining portions of said electrode not contacted by said first portion of said separator to contact said remaining portions of said electrode against said remaining portions of said separator so that regions of said remaining portion of said separator are overlapping; and

welding said overlapping regions of said separator at the region of overlap.

4,565,003

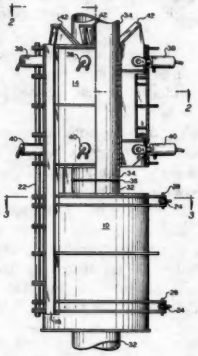
PIPE ALIGNMENT APPARATUS

Malcolm L. McLeod, Stavanger, Norway, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 11, 1984, Ser. No. 569,813

Int. Cl.⁴ B23K *37/04*

U.S. Cl. 29—281.1 **19 Claims**



1. Apparatus for aligning two separate sections of pipe comprising:

(a) elongated cage means comprising, a pair of generally semi-circular sections hinged together on one side thereof;

(b) at least one closure means on the opposite side of said semi-circular sections, having a complementary portion thereof mounted on each of said semi-circular sections, adapted to latch said semi-circular sections together;

(c) a first half of said cage means being adapted to rigidly clamp said cage means about a first of said two sections of pipe when said cage means is closed and latched;

(d) at least three pairs of piston means mounted on a second half of said cage means, the piston means of each of said pairs of piston means being spaced from one another on a line parallel to the axis of said second half of said cage means, each pair of said pairs of said piston means being mounted at spaced points about said second half of said cage means, all of said piston means of said pairs of piston means having operable piston rods extending radially into the interior of said second half of said cage means and all of said piston means of said pairs of piston means being independently operable; and

(e) at least three elongated shoe means, longitudinally coupled to said cage means at spaced points about the interior of said second half of said cage means, each of said shoe means also being coupled to the free ends of said piston rods of a pair of said piston means and said coupling of said shoe means to said cage means and said piston rods being adapted to tilt the axis of said shoe means relative to the axis of said second half of said cage means and move said shoe means radially toward and away from the axis of

said cage means when at least one of said pair of piston means is operated;

(f) said shoe means being adapted to bear against the second section of said sections of pipe when said cage means is closed and latched.

4,565,004

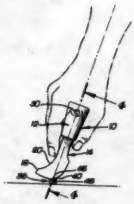
STAINED GLASS WINDOW CONSTRUCTING TOOL

Peter G. Heinz, 22754 Ventura Blvd., Woodland Hills, Calif. 91364

Continuation of Ser. No. 333,643, Dec. 23, 1981, abandoned. This application Mar. 22, 1984, Ser. No. 592,735

Int. Cl.[4] B26B *3/00*

U.S. Cl. 30—314 10 Claims



1. A tool for cutting lead came or the like comprising a short straight handle member having a first and second end and a blade member attached at one end to the first end of said handle member, said handle member and said blade member being oriented in the same direction parallel to a line through the center of said handle, said blade member having a convex cutting edge on its end opposite to said handle member, said convex cutting edge comprising a curved portion forming a sharply rounded corner and relatively straight portions on each side of said corner, one said relatively straight portion at the end of said blade member facing generally away from said handle member and oriented in a direction generally perpendicular to said line through the center of said-handle and the other said straight portion facing generally away from said line through the center of said handle and oriented in a direction generally parallel to said line through the center of said handle, the line through the center of said handle member intersecting said cutting edge near near the sharply rounded corner, the second end of said handle member for grasping in the palm of the hand of the user, with the fingers of the user extending generally along said handle member, so that a force is exerted by the arm and hand in a direction along said handle member and blade member in order to cut a portion of lead came placed against said cutting edge near the sharply rounded corner.

4,565,005

RIGHT-ANGLE INDEX DEVICE

Masayasu Naka, Saitama, Japan, assignor to Kyowa Kentetsu Kabushiki Kaisha, Japan

Filed Jun. 7, 1984, Ser. No. 618,138

Claims priority, application Japan, Dec. 22, 1983, 58-198306[U]

Int. Cl.[4] G01B *3/10*

U.S. Cl. 33—1 G 8 Claims

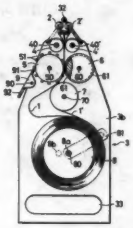
1. A right-angle index device comprising, in combination:

(A) a flat elongated casing having a longitudinal axis, a first end defining an exit end, and a second end;

(B) a take-up wheel disposed in said casing at the second end thereof;

(C) a ratchet wheel having a plurality of teeth around the circumference thereof, and an idler wheel having a circumferential groove, said ratchet and idler wheels being symmetrically disposed about said longitudinal axis near said first end with said teeth engaging said groove, the axes of rotation of all said wheels being parallel to each other and perpendicular to said longitudinal axis;

(D) two unextensible tapes superimposed upon each other and having one end fixed to said take-up wheel, whereby both of said tapes are wound simultaneously on said take-up wheel, said superimposed tapes simultaneously passing



from said take-up wheel between said ratchet and idler wheels, and then out through said exit end of said casing; and

(E) pawl means selectively engageable with said ratchet wheel to permit unimpeded withdrawal of said tapes and selective rewinding thereof.

4,565,006

TEMPLATE FOR USE IN GARMENT MANUFACTURE

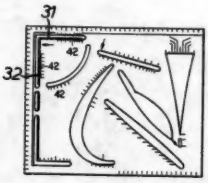
Anastasia Vouyouka, 8, Amorgou St., Thessalonika, Greece

Filed Nov. 23, 1984, Ser. No. 674,320

Claims priority, application United Kingdom, Nov. 25, 1983, 8331529

Int. Cl.[4] A41H *1/00*

U.S. Cl. 33—11 12 Claims



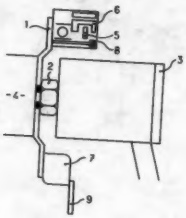
1. A template for marking a pattern for the manufacture of a garment to fit any individual having any particular range of size measurements, said template comprising a flat plate, a series of apertures formed in said flat plate, at least some of said apertures having contours conforming in shape to a desired pattern, said template further comprising scales marked on at least some of said apertures, said scales representing different sizes, said scales including at least one scale for use in connection with the difference between a chest width and a bust width of a person which said garment is intended to fit, said scale being for use in marking shoulder and waist darts on said pattern and being so calibrated in relation to said difference between said chest width and said bust width that said darts result in said pattern being an accurate fit in three dimensions.

4,565,007

PROCESS AND APPARATUS FOR MEASURING THE COILED/UNCOILED LENGTH OF WINDING GEAR CABLE

Olivier Issenmann, Lamorlaye, France, assignor to Geoservices S. A., Le Blanc Mesnil, France

Filed Sep. 26, 1983, Ser. No. 535,756
Claims priority, application France, Sep. 27, 1982, 82 16187
Int. Cl.[4] G01B 5/04
U.S. Cl. 33—127 9 Claims



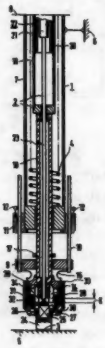
5. An apparatus for measuring the uncoiled length of a cable wound on the drum of a winding gear comprising in combination, a measuring sensor furnishing for each turn of the drum, in one sense of rotation or the other, a series of periodic signals furnishing together with each of the following or preceding signal, an algebraic value corresponding with a fixed length of cable reeled off or reeled on by the drum, an electronic processing circuit for receiving the signals emitted by the said sensor for processing them in order to calculate the length of cable effectively reeled off the drum or reeled onto the latter between the first and the last signal received and for displaying the said value after having previously modified it, if necessary, as a function of the value furnished by a second incremental type displacement sensor used in complement when the gear is subject to variations in its level.

4,565,008

RELATIVE-DISTANCE PICKUP

Hans-Adolf Stölben, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,688
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310788
Int. Cl.[4] G01B 7/02
U.S. Cl. 33—172 E 3 Claims



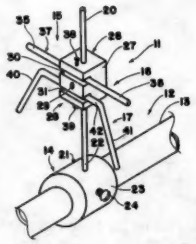
1. Relative-distance pickup, comprising a measuring device including: a housing, a feeler tip disposed in said housing and movable in longitudinal direction of said housing, an indicating device connected to said feeler tip for registering relative motion of said feeler tip with respect to said housing, said feeler tip being subdivided forming first and second feeler tip parts, a remote control drive moving said first and second parts relative to each other between first and second end positions for adjustment of said indicating device, a permanent magnet coupling said first and second parts with each other in said first end position, and a stop holding said first and second parts adjacent each other in said second end position.

4,565,009

SIGHTING APPARATUS

Wade T. Porter, Box 1091, Worland, Wyo. 82401

Filed Dec. 18, 1984, Ser. No. 683,050
Int. Cl.[4] F41G 1/00
U.S. Cl. 33—233 16 Claims



1. Sighting apparatus including a support portion, a connecting portion, a leveling portion and an aligning portion; said support portion including securing means disposed adjacent one end thereof, said support portion being affixable through said securing means to a member to be sighted, said securing means including a mounting ring member and locking means therefor, said support portion extending generally radially from said ring member; said connecting portion including connector means adjacent said securing means; said leveling portion including linear sections extending in opposite directions from said support portion, said linear sections being disposed in a single plane; said aligning portion including aiming sections, one of said aiming sections being located on each side of said support portion, a part of each aiming section being spaced from a corresponding part of the other aiming section a distance substantially equal to spacing between a user's eyes; whereby mounting said sighting apparaus through said securing means on a member to be sighted and focusing on a target along said member with both eyes open creates a double image including a pair of adjacent sighting apparatus in which the aiming sections overlap at a common point alighed with said target.

4,565,010

ELECTRONIC SIGNALING LEVEL

Robert D. Herman, 4720 S. Greenwood, Chicago, Ill. 60615

Filed May 31, 1983, Ser. No. 499,345
Int. Cl.[4] G01C 9/06
U.S. Cl. 33—366 19 Claims

1. An angular orientation detector for detecting an angular orientation of an object with respect to the earth's gravitational center, said detector comprising, in combination:

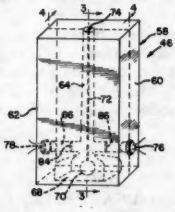
a housing having a vertically extending chamber, said chamber having a top portion;

means for emitting a beam of radiation, said beam emitting means being positioned for emitting a beam of radiation defining one beam path extending through a portion of said chamber;

means for receiving a beam of radiation, said beam receiving means being positioned for receiving a beam of radiation

emitted along said beam path by said beam emitting means;

plumb means freely suspended from said top portion of said chamber for being swingable across said chamber for coming to rest in a position for blocking said beam path when said detector is at a preselected angular orientation for substantially preventing said beam receiving means



from receiving radiation from said beam emitting means; and

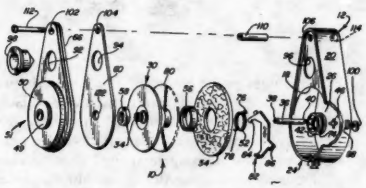
electrically actuated means for emittiing a signal, said signal means being actuated in response to a substantial absence of radiation being received by said beam receiving means upon said plumb means blocking said beam path whereby said signal means indicates said detector is at said preselected angular orientation.

4,565,011

AUTOMATICALLY RETRACTABLE CHALK LINE ASSEMBLY

Kim Karger, 4034 S. Joliet Ave., Lyons, Ill. 60534

Filed Jul. 30, 1984, Ser. No. 636,115
Int. Cl.[4] B44D *3/38*
U.S. Cl. 33—414 **7 Claims**



1. A chalk line assembly in combination with an automatically retractable assembly, comprising:

a housing having a bottom;

a separator wall spaced from said bottom and defining a powdered chalk compartment, said separator wall having an opening defining an entry into the interior of said chalk compartment, said retractable assembly having a gear plate spaced from sid separator wall and defining a gear compartment for housing a gear arrangement, said gear plate having an opening defining an entry into the interior of said gear compartment;

a spool assembly including a spool disposed in said chalk compartment, shaft means coupled between said retractable assembly and said bottom for rotatably supporting said spool means, brake means associated with said shaft means for controlling the rotational movement of said spool;

a lever connectably secured to said brake means and having an arm extending exteriorly of the housing for releasing brake action imposed by said brake means on said spool, said means for shielding said gear arrangement and said brake means for the powdered chalk, said entries being coaxially aligned and defining an access into the interior of said chalk compartment for the introduction of said powdered chalk;

a removable plug for closing both of said entries;

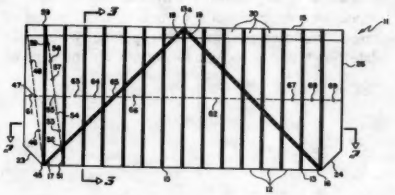
a chalk line wound on said spool and extending exteriorly through a hole in a narrowed portion of said housing, chalk wiping means compressed about said chalk line for limiting the amount of chalk adhering to the chalk line, said retractable assembly having a spring which is wound as the chalk line is pulled out of the housing, means associated with said retractable assembly for preventing overwinding of said spring, and means for securing said retractable assembly and said separator wall to said housing.

4,565,012

MARKING AND MEASURING INSTRUMENT

Peter R. Bilodeau, 25 Fernbrook Rd., Northboro, Mass. 01532, and Theodore W. Bilodeau, 535 Sudbury Rd., Concord, Mass. 01742

Filed Aug. 6, 1984, Ser. No. 638,033
Int. Cl.[4] B43L *7/06*
U.S. Cl. 33—458 **12 Claims**



1. A line marking instrument for marking off lines and distances comprising:

(a) a series of elongated portions each having a width dimension, length dimension and thickness dimension sequentially disposed in side by side relationship with respect to their length dimensions, said width dimension being substantially less than said length dimension and said thickness dimension being less than said width dimension, each said elongated portion having at its extreme ends oppositely disposed first and second end portions, each terminating in a line marking edge;

(b) first hinge means interconnecting adjacent portions at their length dimension whereby said portions are pivotally interconnected, said first hinge means defining first straight grooves between and extending the length of adjacent elongated portions, all of said first end portions being serially disposed one to another and all of said second end portions being serially disposed one to another, the line marking edges of said first end portions substantially defining a first straight elongated line marking edge and the line marking edges of said second end portions substantially defining a second straight elongated line marking edge; and

(c) at least one second hinge means defining a second straight elongated groove disposed at an angle to and passing through predetermined consecutive ones of said first grooves.

4,565,013

GAUGE FOR MEASURING CLEARANCE IN THE BODY SIDE BEARINGS OF RAIL CARS

Wayne D. Medlock, 4942 Saddlerock Way, Sacramento, Calif. 95841

Filed Dec. 24, 1984, Ser. No. 685,868
Int. Cl.[4] G01B *5/00, 5/14*
U.S. Cl. 33—517 **8 Claims**

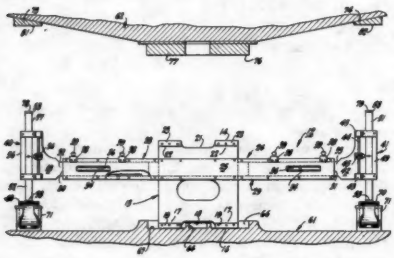
1. Gauge for measuring clearance in the body side bearings of rail cars having a body center plate rotatably supported on

the center plate bowl of a truck bolster including a pair of side bearing rollers positioned in closely spaced relation below the respective body side bearings for supporting engagement therewith as the car body tilts from side to side, said gauge comprising:

a. a vertical frame having a lower end shaped for face to face engagement with the upward facing surface of the center plate bowl when the car body is separated from the truck bolster, and an upper end shaped for face to face engagement with the downward facing conjugate surface of the body center plate;

b. a horizontal cross beam mounted on said frame and terminating at opposite ends located in the vicinity of the respective side bearing rollers when said lower end of said frame is in engagement with the upward facing surface of the center plate bowl and said frame is oriented so that said cross beam is in parallel relation to the longitudinal axis of the truck bolster;

c. a pair of graduated blades each translatably mounted on a respective end of said cross beam for vertical movement between a first location in which the bottoms of said blades are in engagement with the top surfaces of the respective subjacent rollers when said lower end of said frame is in down position in engagement with the center plate bowl, and a second location with the tops of said



blades in engagement with the bottom surfaces of the respective superjacent body side bearings when said upper end of said frame is in up position in engagement with the body center plate.

6. Gauge for a rail car truck bolster having a center plate bowl and a pair of side bearing rollers, said gauge comprising:

a. an upright frame having a lower portion shaped for face to face engagement with the upward facing surface of the center plate bowl;

b. a cross beam mounted on said frame and extending in opposite directions therefrom to terminate at opposite ends located in the vicinity of the respective side bearing rollers when said lower portion of said frame is in engagement with the upward facing surface of the center plate bowl and said frame is oriented so that said cross beam is in parallel relation to the longitudinal axis of the truck bolster;

c. a pair of graduated blades each translatably mounted on said opposite ends of said cross beam for movement toward and away from the subjacent one of said side bearing rollers; and,

d. indicia on said blades and on an adjacent portion of said ends of said cross beam for indicating the extent of variation from the normal difference in elevation between the side bearing rollers and the upward facing surface of the center plate bowl of a truck bolster of a specific size.

4,565,014

PROCESS FOR DRYING AMINOGUANIDINE BICARBONATE

David F. Doonan, Guilford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed May 24, 1984, Ser. No. 613,698
Int. Cl.[4] F26B *3/02*
U.S. Cl. 34—36 **10 Claims**

1. A process for drying a wet cake of aminoguanidine bicarbonate comprising

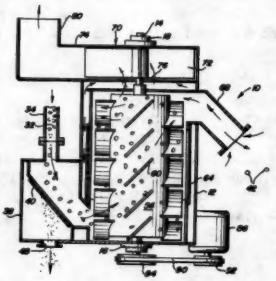
subjecting said wet cake of aminoguanidine bicarbonate to drying temperatures from about 35° C. to about 95° C. under a carbon dioxide-containing atmosphere for a sufficient amount of time to form a dried aminoguanidine bicarbonate product which is substantially free of moisture.

4,565,015

CENTRIFUGAL PELLET DRYER

Raymond E. Hundley, III, Eagle Rock, Va., assignor to Gala Industries, Inc., Eagle Rock, Va.

Filed Jul. 27, 1983, Ser. No. 517,679
Int. Cl.[4] F26B *11/12*
U.S. Cl. 34—182 **6 Claims**



1. In a centrifugal pellet dryer of the type comprising a housing with a slurry inlet, a water discharge adjacent the bottom thereof for discharging most of the water from the slurry, a pellet discharge adjacent the top thereof, a peripheral screen interiorly of the housing in spaced relation thereto, a rotor with inclined blades positioned within the screen for conveying pellets upwardly and centrifugally discharging the pellets against the screen for further separation of water therefrom for discharge from the bottom of the housing and for discharge of pellets from the pellet discharge adjacent the top of the housing, means driving the rotor, that improvement comprising a fan supported above the housing and having an intake communicated with the top portion of the interior thereof, said fan including an air discharge for inducing countercurrent airflow into the pellet discharge at the upper end of the housing for more efficiently drying pellets as they exit from the housing, said pellet discharge comprising a downwardly inclined chute with an open lower end to admit air, said fan including an impeller disposed in a fan casing, said rotor being supported by a shaft having an upper end extending into the fan casing with the impeller being mounted on the shaft for rotation therewith, a single motor drivingly connected to said shaft for driving said rotor and impeller, said slurry inlet including means separating the pellets and water and discharging water to the water discharge and discharging wet pellets into the interior of the screen adjacent the bottom thereof, said screen having an outlet adjacent the top thereof in communication with the pellet discharge chute, said housing having an opening in the top portion thereof communicating with the fan casing for enabling air to flow inwardly through the chute into

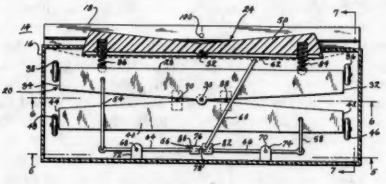
the housing and into the fan casing with the dry air entering the chute coming into contact with the pellets to remove additional moisture therefrom.

4,565,016

PERSPECTIVE DRAFTING INSTRUMENT

Ronald T. Horbinski, 3159 N. Humboldt Blvd., Milwaukee, Wis. 53212

Filed Jul. 6, 1984, Ser. No. 628,390
Int. Cl.⁴ B43L *13/14*
U.S. Cl. 33—432 **12 Claims**



1. A drafting instrument for drawing perspective lines without physically pre-establishing and marking a vanishing point comprising:

a carriage;

a drawing blade on said carriage providing an edge for drawing said lines;

roller means pivotally mounted to said carriage and supporting said carriage for movement along a drawing surface; and

control means for adjustably pivoting said roller means such that each point along said drawing blade scribes an arc about a common point as said carriage moves, said drawing blade defining substantially parallel lines in perspective radiating substantially from said common point as a vanishing point as said carriage moves;

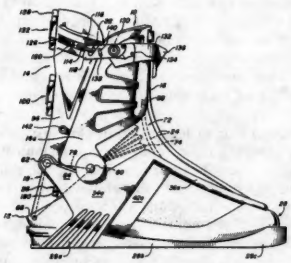
wherein said roller means comprises axle means pivotably mounted to said carriage and having wheel means rotatably secured thereto, said axle means and said wheel means having different pivot axes, and wherein said control means comprises means for adjustably setting the degree of pivoting of said axle means to selectively set the radius of said arc and the distance of said vanishing point.

4,565,017

SKI BOOT

Marco T. Ottieri, Manchester, Mass., assignor to Ottieri Enterprises, Boston, Mass.

Continuation of Ser. No. 655,905, Sep. 28, 1984. This application Oct. 26, 1984, Ser. No. 664,991
Int. Cl.⁴ A43B *5/04*
U.S. Cl. 36—117 **21 Claims**



1. A ski boot having

a base element providing sole, toe and instep portions, and the sole portion having heel, arch and ball sections,

a forward first shin cuff element mounted to said base element for supportingly engaging the shin region of a wearer,

a rear second heel element mounted to said base element for supportingly engaging the back of the heel region of a wearer,

a rear third calf cuff element mounted to said base element for supportingly engaging the calf region of a wearer,

said first, second and third cuff elements being movable between closed positions for providing said supporting engagements and open positions for allowing a wearer to step in and alternatively out of the ski boot,

and further having the improvement comprising

A. first hinge connection means mountingly joining said first shin cuff element to said base element at a first distance above said sole portion, and located along the length of said base element above the forward end of the sole heel section,

B. second hinge connection means mountingly joining said second heel element to said base element at a second distance above said sole portion significantly shorter than said first distance and located along the length of said base element above the rear of the sole heel section, and

C. third hinge conection means mountingly joining said third cuff element to said base element at a third distance greater than said first distance and located along the length of said base element between said first and second hinge connections,

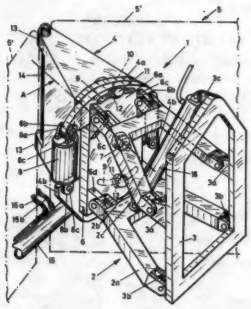
so that said first, second and third hinge connection means define, in vertical side view, the corners of a triangle disposed above the sole heel section.

4,565,018

PLOW FRAME FOR A FRONT-MOUNTED SNOWPLOW

Anders Oya, Fiane, Norway, assignor to Stiansen & Oya A/S, Fiane, Norway

Filed Jan. 16, 1985, Ser. No. 692,101
Claims priority, application Norway, Jan. 19, 1984, 840199
Int. Cl.⁴ E01H *5/06*
U.S. Cl. 37—232 **6 Claims**



1. A plow frame for a front-mounted snowplow, for example of the twin shovel blade type which can be set in crosswise, diagonal or V-configurations, which via a linkage system with a coupling frame is detachably secured to a coupling frame on a vehicle, said plow frame having a front member to which the shovel blade is fastened and a rear member to which the linkage system is fastened, said two members being mutually pivotable about an axis disposed in the direction of movement of the plow, characterized in that the members have facing slide plates joined together by a pivot bolt which constitutes said axis of rotation, and each of the slide plates has a pair of opposing projections at the upper and lower portions thereof, respec-

tively, wherein damper members are provided between said upper and lower projections.

4,565,019

STEAM IRON STAND WITH PIVOTABLE WATER RESERVOIR

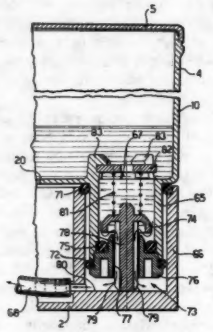
Alfredo Cavalli, Via Galileo Galilei, 9, Pessano Con Bornago (Milan), Italy

Filed Oct. 22, 1984, Ser. No. 663,212

Claims priority, application Italy, Oct. 24, 1983, 23333/83[U]; Mar. 23, 1984, 21338/84[U]; Mar. 23, 1984, 21339/84[U]

Int. Cl.[4] D06F *75/40*

U.S. Cl. 38—77.6 **17 Claims**



1. A steam iron assembly for domestic use comprising a base for an iron and a water reservoir in liquid communication with the iron via a pivotable coupling, characterised in that the reservoir **(4)** is mounted on the base **(2)** by the pivot coupling **(7)**, **(12)** having a vertical axis of rotation, and that the pivot coupling comprises a vertical shaft **(7)** rigidly held by the base **(2)** and a vertical cylindrical seat **(12)** rigidly associated with the reservoir **(4)** and removably and rotatably coupled to the shaft **(7)**.

4,565,020

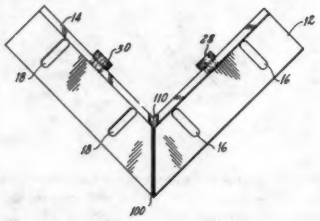
FABRIC STRETCHING DEVICE

Dulce Beatriz, and Leonardo Beatriz, both of Dade County, Fla.

Continuation-in-part of Ser. No. 263,782, May 14, 1981, abandoned. This application Sep. 27, 1983, Ser. No. 535,665

Int. Cl.[4] D06C *3/08*

U.S. Cl. 38—102.5 **3 Claims**



1. A stretching device for independently stretching fabric or canvas mounted on a stretcher frame in two directions, perpendicular to each other, comprising:

A. a first L-shaped rigid and flat support member for engaging adjacent structural members of said frame forming a corner joint and having apertures for fastening means connectable through said apertures to the adjacent engaged structural frame member for rigidly securing said first support member in place with respect to said adjacent engaged frame member;

B. a second rigid support member having an L-shape cross-section integrally built on the inner edge of said first support member and extending perpendicularly from it so that said second support member engages the inner walls of the adjacnet members engaged by said first support member, whereby said first and second support members comprise a pair of right angle channels that intersect at a corner joint;

C. a beveled groove located at said corner at said corner joint and extending from the outside corner of said first support member to the inside corner of said second support member and of such a depth therethrough whereby that when the two legs of said first support member are joined together thereby closing the groove therebetween, the bottom surfaces of said leg portions are inclined at an angle of slightly less than 180 degrees so that when said fastening means are tightened the surfaces of said structural frame members adjacent to the canvas are caused to separate from it;

D. and tensioning means mountable in said second support member for engaging the adjacent frame member for movement in a direction parallel to its corresponding elongated aperture, whereby said device may be placed on a corner joint of said frame and each structural member may be separately tensioned by loosening its corresponding apertures, activating said tensioning means and thereafter tightening said fastening means to fix the position of the frame members.

4,565,021

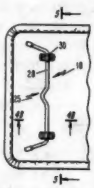
PORTABLE IRONING BOARD

John W. Kay, Frankfort; Dale A. Shaffer, Lebanon, and Maurice H. Basquin, Lebanon, all of Ind., assignors to Harmeson Manufacturing Company, Inc., Frankfort, Ind.

Filed Aug. 6, 1984, Ser. No. 637,835

Int. Cl.[4] D06F *81/02*

U.S. Cl. 38—137 **11 Claims**



1. A folding table, comprising:

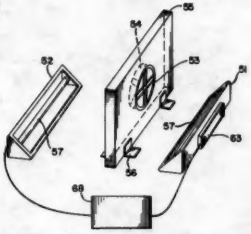
(a) a table top;

(b) a first pair of coplanar legs connected respectively to opposite ends of a first cross rod and a second pair of coplanar legs connected respectively to opposite ends of a second cross rod, each first and second cross rod including an offset or crook portion formed intermediate opposite ends thereof, each offset portion lying in a plane offset with respect to the associated pair of legs; and

(c) means for pivotally connecting the first and second pairs of legs to an underside of the table at spaced locations from each other, said connecting means enabling each first and second pair of legs to pivot (1) away from the table into a predetermined setup position established by flush contact of the offset portion with the table underside so that the legs support the table above a support surface, and (2) towards the table into a foldup position wherein the legs are in flush contact with the table underside and extend towards the associated end of the table and the offset portion is disposed in a plane offset from the plane of the legs and the underside each offset portion thereby defining with the table underside an opening inclined

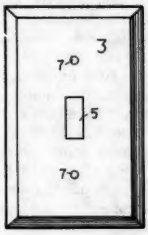
away from the table in the foldup position, said opening being engageable with a mounting hook to store the table on a wall between periods of use whereby support forces generated by the weight of the table acting upon the mounting hook through the offset portion supported thereby tends to urge the legs into tight contact with the table underside.

4,565,022
METHOD AND APPARATUS FOR ANIMATING ILLUMINATED SIGNS AND DISPLAYS
William L. Chapin, 2410 W. Palm Ave., Orange, Calif. 92668
Filed Sep. 27, 1982, Ser. No. 423,991
Int. Cl.[4] G09F *13/00*
U.S. Cl. 40—442 **23 Claims**



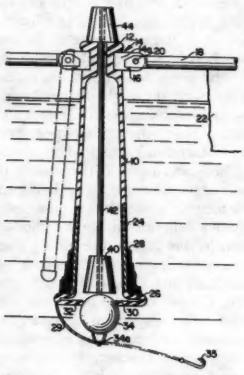
1. An article of manufacture comprising
(a) a first visibly transparent sheet,
(b) a first scene-view visibly fluorescent to ultraviolet radiation in the approximate wavelength range of 3000 Å to 4000 Å affixed to one side of said first sheet,
(c) at least one alternate visibly transparent sheet, and
(d) an alternate scene-view visibly fluorescent to ultraviolet radiation in the approximate wavelength range of 3000 Å to 4000 Å affixed to one side of each said alternate sheet, said alternate scene view being oriented in proper relation to said first scene view, whereby when said first and alternate visibly transparent sheets are positioned on opposite sides of a visibly transparent, ultraviolet absorbing means and sequentially illuminated with ultraviolet radiation, a visual sensation of apparent motion between said first and alternate scene-views is produced.

4,565,023
INDICIA DISPLAY MEANS
G. Ross Carlisle, 391 Main St., Newfield, N.Y. 14867
Filed Sep. 6, 1983, Ser. No. 529,527
Int. Cl.[4] G09F *7/00*
U.S. Cl. 40—486 **2 Claims**



1. Indicia display means for identification of an associated utility circuit or the like comprising: an indicia-bearing member having a plurality of visible indicia thereon, the indicia being capable of identifying a plurality of utility circuits or the like, and a mask member proportioned and arranged to be superimposed on said indicia-bearing member, said mask member having areas which, when selectively perforated by a user, expose one or more of said indicia on the indicia-bearing member to view, said mask member having visible indicia on the reverse side thereof, corresponding to the indicia carried by said indicia-bearing member but located in mirror-image relation with respect to the location of the indicia on said indicia-bearing member, whereby the associated utility circuit or the like is selectively displayed from the plurality of possible utility circuits represented by the indicia.

4,565,024
ICE FISHING DEVICE
Leslie R. Maerz, P.O. Box 1612, Stony Plain, Alberta T0E 2G0, Canada
Filed Oct. 24, 1983, Ser. No. 544,852
Claims priority, application Canada, Dec. 30, 1982, 418761
Int. Cl.[4] A01K *97/12*
U.S. Cl. 43—17 **15 Claims**



1. An ice fishing device comprising:
a hollow body with means for suspending said body in an ice fishing hole with at least a portion of said body below water level, said body having an opening at the bottom and the top into an interior space within the body,
a bouyant, movable closure for said bottom opening capable of normally preventing ingress of water into said space when said body portion is submerged,
means vertically movable, by means of buoyancy, within said space in response to entry of water through said bottom opening, said vertically movable means being connected through the top opening to indicating means visible above the ice fishing hole at least when there is water in said interior space at a level similar to that outside the body, and
a fishing line held axially coiled about said body near the bottom thereof substantially centrically combined with said bottom opening so as to be pulled easily therefrom without the necessity of body rotation, said line being operatively connected to said bottom closure to cause displacement thereof when the line is pulled by a fish, thus allowing water to enter the previously empty interior space of said body, thereby causing the vertically movable means to rise due to its buoyancy so that the indicating means signals that the line has been pulled by a fish.

4,565,025

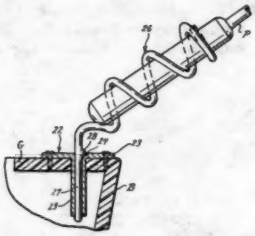
FISHING POLE MOUNT

William L. Behrle, 385 Grand Terrace Ct., Fenton, Mo. 63026

Continuation-in-part of Ser. No. 481,839, Apr. 4, 1983. This application Dec. 8, 1983, Ser. No. 559,299

Int. Cl.[4] A01K *97/10*

U.S. Cl. 43—21.2 1 Claim



1. An arrangement for holding fishing poles and the like comprising: a holder for a pole that provides an elongated opening to receive and surround the handle of the pole, the holder having a shank extending therefrom, and a fitting to be secured to a boat or the like and to receive and secure the holder thereto, the fitting comprising a flat plate and a projecting tube secured to the under side of the plate and extending downwardly therefrom, the plate having a hole through it aligned with the opening through the tube, the angle of the tube to the plate and the angle of the shank to the axis of the holder being such as to dispose the holder and a pole therein at an angle to the plate, the arrangement being such that the shank of the holder can be removably inserted into the tube through the hole and be held there with its axis projecting upwardly and outwardly, the fitting being substantially flat to the upper surface upon which it is mounted so that when the holder is removed therefrom, there is no substantial obstruction produced by the fitting, the holder comprising a helical coil at a fixed acute angle with the shank, and said shank depending therefrom just sufficiently far to stabilize the holder when holding a pole onto the boat, and a lug and notch arrangement for interengagement between the shank and the plate to limit descent of the shank into the socket and to limit rotation of the shank in bracket, the lug being a single nub-like element formed integrally with the material of the shank extending laterally from one side of said shank, and a single notch being formed in the plate adjacent the upper surface thereof and extending downwardly thereinto only so far as to receive the lug and thereby to limit the descent of the shank into the socket.

4,565,026

REMOTE RELEASE DEEP TROLLING SYSTEM

August E. Bohme, 5759 Larson Pl., West Vancouver, British Columbia, Canada (V7W 1S5)

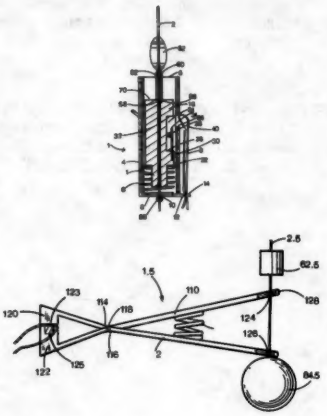
Filed Sep. 15, 1983, Ser. No. 532,370

Int. Cl.[4] A01K *91/00*

U.S. Cl. 43—43.12 9 Claims

4. A device as claimed in claim 1, wherein the pin is hingedly connected to the second member in a manner to permit the free end to swing out through the aperture when the release means is struck.

9. A fishing line connecting device having means for connecting the device to a first line or cable for use below the surface of a body of water; means for releasably connecting the device to a second line; release means for releasing the second line when the release means is struck; a pair of elongated members pivotally connected together; and means resiliently biasing the members so a first two adjacent ends of the members are together and a second two adjacent ends are apart, the means for connecting to the first line or cable comprising apertures through the members near the second ends, the means for releasably connecting comprising the first two ends



of the members and the release means comprising one of the second ends.

4,565,027

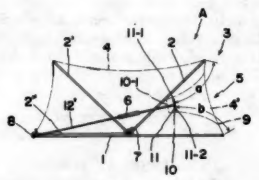
BASKET FOR CATCHING FISH AND THE LIKE

Megumi Sato, 423 Ohaza Nanatsuie, Yanagawa-shi, Fukuoka, Japan

Filed Nov. 7, 1984, Ser. No. 668,949

Int. Cl.[4] A01K *69/08*

U.S. Cl. 43—102 1 Claim



1. A basket for catching fish and the like comprising: a basket member composed of a substantially circular base frame, substantially semi-circular right and left supporting rings disposed at diametrically opposite positions of said circular base frame, a three-member frame composed of a plurality of semi-circular movable frame members both ends of which are supported by said supporting rings such as to be rotatable forwardly and backwardly around said supporting rings and at least two of which are rotatably disposed at positions above and equally distant from said circular base frame, and a net portion which is stretched around the outer peripheral surface of said three-member frame; an opening for fish and the like provided on a side surface of said basket member; an entrance portion made of a net portion which is extendingly connected to the inner periphery of said opening and which is tapered such as to become narrower and narrower from the inner periphery of said entrance portion toward the inside of said basket member; an inner entrance frame disposed at the inner end of said entrance portion for defining said inner end of said entrance portion; an exit checking portion made of a net portion which is extendingly connected from said inner end to the

inside of said entrance portion such that the end of said exit checking portion remains in a free state by cutting said net portion which incorporates said exit checking portion; and a hook for allowing said basket to be freely unfolded and folded and for retaining at least one movable frame member on said circular base frame.

4,565,028

CHRISTMAS TREE STAND

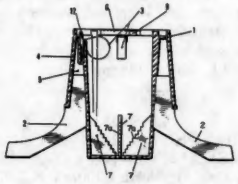
Gerhard Stephan, Ottawa, Canada, assignor to AVA Tech International Ltd., Ottawa, Canada

Filed Apr. 18, 1984, Ser. No. 601,640

Claims priority, application Canada, Apr. 25, 1983, 426618; Jan. 17, 1984, 445421

Int. Cl.[4] A47G *7/00*

U.S. Cl. 47—39 **10 Claims**



1. A stand for trees or poles comprising a cylindrical container supported by a plurality of legs;

said container comprising a body having a unitary bottom, side wall, and an open top;

said wall having a plurality of pockets opening in the same direction as said top and being formed therein near the upper interior thereof;

a plurality of springs each having a straight portion forming a downwardly directed end inserted within a respective pocket; and a closed loop extending into said body; and

a plurality of ribs integrally formed with said bottom and side wall of said body near the bottom interior thereof, said ribs having an edge conically inclined outwardly from the bottom toward the top and being stepped to securely engage a tree inserted in said body, said loops and said ribs cooperating to maintain said tree vertical.

4,565,029

TRAFFIC RESPONSIVE CONTROL SYSTEM FOR AUTOMATIC SWINGING DOOR

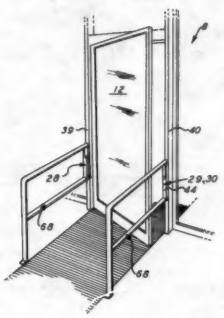
Henning N. Kornbrekke, Burlington; David M. Cirkot, Ansonia, and Anthony R. Ranaudo, Naugatuck, all of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Nov. 28, 1983, Ser. No. 555,565

Int. Cl.[4] E05F *15/20*

U.S. Cl. 49—25 **27 Claims**

1. In an automatic door installation having a swinging door, a power operator for swinging the door between a closed position thereof closing a doorway opening and an open position thereof on a swing side of the doorway, and a traffic responsive control system comprising radiant energy emitter and receiver means for sensing traffic along a path of travel through the doorway opening, and door control means operated by the traffic sensing means to automatically open the door for traffic to pass along said path of travel through the doorway opening, the improvement wherein the traffic sensing means comprises at least one multiple emitter sensor having a bank of a plurality of radiant energy emitters for emitting radiant energy beams having axes angularly spaced along the said traffic path of travel and collectively providing an emitted energy coverage area intersecting the said traffic path of travel and radiant energy receiver means mounted adjacent the bank of emitters for receiving reflected radiant energy emitted from the bank of emitters, the said one multiple emitter sensor being a swing side sensor mounted adjacent one side of the doorway opening to provide a said coverage area on the swing side of the doorway which intersects the path of travel of the swinging door as it is swung between its said closed and open positions, and wherein the traffic responsive control system further



comprises door position responsive means for selectively deactivating and reactivating the emitters of the said swing side sensor to avoid sensing the door as it swung between its said closed and open positions.

4,565,030

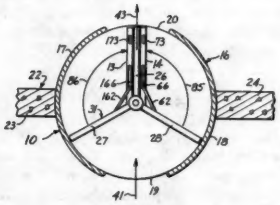
EMERGENCY EXIT SYSTEMS FOR REVOLVING DOORS

William A. LaSance, Altadena, Calif., assignor to Dynametric, Inc., Pasadena, Calif.

Filed Dec. 27, 1983, Ser. No. 566,030

Int. Cl.[4] E05D *15/02*

U.S. Cl. 49—44 **24 Claims**



1. A method for providing an emergency exit for people through a revolving door having leaves angularly spaced from each other in an operating condition and rotatable in an enclosure having opposed inside and outside openings relative to a building wall, comprising the steps of:

continuously imposing on said leaves a bias tending to fold said leaves toward each other;

releasably retaining said rotatable leaves angularly spaced from each other against said bias in said operating condition;

releasing said angularly spaced leaves in response to an emergency condition; and

providing an emergency exit through said openings by employing said bias to fold said released leaves toward each other.

4,565,031
RAIL ARRANGEMENT FOR FLUSH SLIDING DOOR PANELS

Kazuhiko Sakamoto, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 574,881
Claims priority, application Japan, Feb. 2, 1983, 58-15903; Dec. 31, 1983, 58-251425
Int. Cl.[4] E05D *15/20*
U.S. Cl. 49—130 4 Claims

1. A double panel door arrangement wherein the two panels will be disposed with their inner edges flush up against one another when the door is closed and one panel will be superposed over the other when the door is open, said arrangement comprising in combination:

(a) an elongated frame (1) defining a plane and a frame inner and outer side, with upper and lower wall portions (1*a*, 1*b*), a defined travel path (2, 3) with stop ends disposed longitudinally across said frame, said travel path having a linear portion (2*a*) and outer end sections;

(b) inwardly bent oblique equal path portions (2*b*, 2*c*, 3*b*, 3*c*) at said end sections, travel path switching portions (6, 7) in the vicinity of the ends of said linear portion (2*a*), a slidable base plate (18) holding said switching portions (6, 7) first and second route portions (19, 20) over said base plate (18), said route portions (19, 20) being selectively slidable over said base plate;

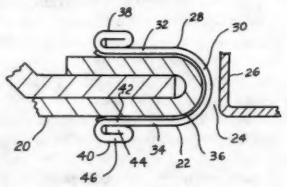
(c) equally sized rectangular panels (4, 5) with inner edges which are to abutt each other in the door closed position, said panels being disposed to slide along said travel path; and,

(d) one and another runner means (14, 15) affixed to said panels to travel said travel path and engage said route portions (19, 20), one runner means being at said stop ends at the door closed position and engaged with said oblique path portion as a fulcrum, the other runner means engaging said switching position (6, 7) route portion so as to move one panel obliquely when opening the door and then guiding said panel to be superposed alongside the other panel when the door is opened.

4,565,032
EDGE GUARD

Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Jun. 6, 1984, Ser. No. 617,766
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.[4] B60J *5/00*
U.S. Cl. 49—462 7 Claims

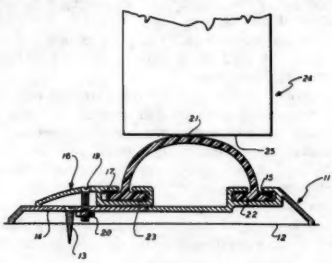


1. In combination with the trailing edge of a swinging metal closure on a vehicle, which trailing edge in closed position of the swinging metal closure, is separated from an adjacent panel of the vehicle by a gap, an edge guard fitting onto the trailing edge comprising a metal strip formed into a channel having an interior and an exterior and comprising a base and inner outer legs extending from said base for applying a self-retention force against opposite side of the trailing edge, insulating means disposed between said channel and the trailing edge at least along the force-applying points of the legs for insulating the metal of the edge guard channel from that of the trailing edge, and beads integral with and at the distal ends of said legs, at least one of said beads comprising a double thickness fold of the metal strip folded back onto the corresponding leg so that three thicknesses of metal result at the force-applying point of that leg, wherein the combined thicknesses of said strip and of said insulating means at said base are less than the thickness of said gap, and in which said double thickness fold comprises an outer thickness portion and an inner thickness portion of said strip, said inner thickness portion being contiguous with a lengthwise edge of the metal strip, and in which said insulating means lines the entire interior of said channel but terminates at the distal ends of said legs so as to leave the exterior of the channel uncovered by any insulating means.

4,565,033
THRESHOLD HAVING A VERTICALLY ADJUSTABLE FLEXIBLE WEATHERSTRIP

Lionel Tinfow, 24 Oak Pl., North Caldwell, N.J. 07006

Filed May 9, 1984, Ser. No. 608,352
Int. Cl.[4] E06B *1/70*
U.S. Cl. 49—468 1 Claim



1. A threshold having a vertically adjustable, flexible weatherstrip comprising:

(a) a unitary base member having an upper surface, spaced apart first and second edges engagable to a supporting surface beneath a door and a pair of spaced apart ends,

(b) the base member having an uninterrupted, upwardly opening channel formed integrally on its upper surface extending from end to end thereof, and generally adjacent to and parallel with one of the edges, the channel being upwardly open uninterruptedly from end to end of the base member, the said opening being dimensioned more narrow than the channel in a direction normal to the said edges;

(c) unitary weatherstrip adjustment means adjustably movably mounted on the upper surface of and extending uninterruptedly from end to end of the base member and positioned generally adjacent to the edge thereof opposite the first said channel, the said adjustment means having both an upper surface and an edge engagable to the upper surface of the base member,

(d) the weatherstrip adjustment means having an uninterrupted, upwardly opening channel formed integrally on the upper surface thereof generally opposite to and extending from end to end thereof and parallel with the said edge thereof, the upward opening to the channel on the weatherstrip adjustment means extending uninterruptedly along the entire length of the edge, being open at both

ends and dimensioned more narrow than its communicating channel in a direction normal to the edge of the adjustment means,

(e) a flexible generally upwardly convex weatherstrip detachably mounted to the base member and the adjustment means having a first edge with a crossectional configuration conforming to the crossectional configuration of the channel on the upper surface of the base member and a second edge with a crossectional configuration conforming to the crossectional configuration of the channel on the upper surface of the adjustable means,

(f) the first and second edges on the weatherstrip being slidably mounted in the channel on the base member and the channel on the adjustment means respectively, the weatherstrip extending through the upward openings of each said channel uninterruptedly from end to end of the threshold,

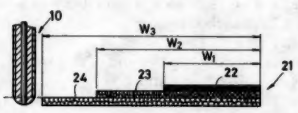
(g) retaining means extending between the base member and the adjustment means, the adjustment means being movable in a direction toward and from the channel formed on the base means and being fixedly positionable by the retaining means at a range of distances from said channel sufficient to alter upwardly and downwardly the apex of the upwardly convex weatherstrip.

4,565,034

GRINDING AND/OR CUTTING ENDLESS BELT

Shinji Sekiya, Tokyo, Japan, assignor to Disco Abrasive Systems, Ltd., Tokyo, Japan

Filed Jan. 3, 1984, Ser. No. 567,682
Int. Cl.⁴ B24D *11/00*
U.S. Cl. 51—401 **3 Claims**



1. An endless belt made of grindstone comprising a plurality of layers of electrodeposited abrasive grains and being provided with no base material for supporting said layers, the grindstone consists of a plurality of parts, each of which comprises a plurality of layers of electrodeposited abrasive grains and the grain sizes of which are different from one another, wherein said parts of said grindstone are laminated stepwise with one another so that the width of the upper part is smaller than that of the lower part and the lower part is partially exposed out of at least one side end portion of the upper part.

4,565,035

IMPELLER EVEN DISCHARGE APPARATUS

James H. Carpenter, Jr., and Ronald L. Mullins, both of Hagerstown, Md., assignors to Kennecott Corporation, Cleveland, Ohio

Filed Apr. 19, 1984, Ser. No. 600,731
Int. Cl.⁴ B24C *5/06*
U.S. Cl. 51—434 **7 Claims**

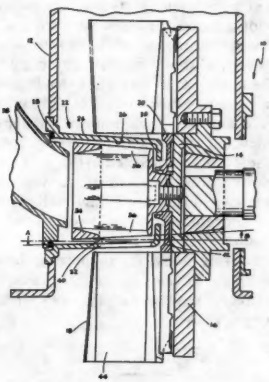
1. A throwing wheel assembly for throwing impact blast media at high speed, comprising:

a rotor, the rotor being rotatable about a longitudinal axis;

a plurality of radially extending vanes connected to the rotor for rotation therewith, the vanes each having a radially innermost portion spaced a predetermined distance from the longitudinal axis of the rotor so as to define an opening centered around said longitudinal axis;

a generally frusto-conical impeller connected to the rotor for rotation therewith, the impeller being disposed within the opening defined by the vanes and centered about said longitudinal axis, the impeller being adapted to receive impact blast media therein, the impeller including a circumferentially extending outer wall having a radially extending opening through which impact blast media can be directed;

a generally frusto-conical casing concentrically disposed within the opening defined by the vanes and about the impeller, the casing including a circumferentially extending inner wall in proximity with the outer wall of the impeller, the inner wall having a radially extending opening through which impact blast media received from the impeller can be directed onto the vanes;



a feed spout attached to said housing in spaced relation to said impeller; and

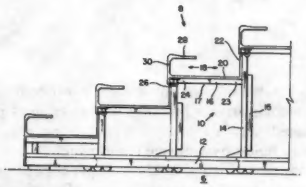
the outer wall of the impeller and the inner wall of the casing being disposed in a non-parallel relationship, the outer wall of the impeller and the inner wall of the casing being positioned closest to each other adjacent said feed support.

4,565,036

FRONT-SUPPORTED TELESCOPING SEATING STRUCTURE

Hugh M. Lyman, Jr., P.O. Box 38, Enumclaw, Wash. 98022

Filed Feb. 6, 1984, Ser. No. 577,060
Int. Cl.⁴ F04H *3/12*
U.S. Cl. 52—9 **20 Claims**



1. A telescoping seating structure having a plurality of rows, capable of horizontal movement across a floor surface between a rearward retracted position for storage against a rear wall, with a plurality of rows superposed vertically above each other, and a forward extended position for seating use, with the rows arranged stepwise downward from the rear wall, wherein each row comprises:

two or more row assemblies, each having a carriage assembly supportable on a floor surface by a plurality of wheels and capable of horizontal movement across the floor surface, a substantially vertical post rigidly attached to the carriage assembly and extending upwardly to a predetermined height above the floor surface, and a cantilevered

arm rigidly attached to the vertical post a preset distance below the top of the vertical post and extending forward a preset distance from the vertical post;

a seating assembly attached to the cantilevered arm and spanning laterally between the row assemblies having a substantially vertical rear riser positioned above a fixed end of the cantilevered arm and extending from an upper surface of the cantilevered arm to a point just below the upper end of the vertical post, a horizontal tread panel engaging the upper surface of the cantilevered arm and extending forwardly from the fixed end of the cantilevered arm to a free end of the cantilevered arm, a substantially vertical front riser adjacent to the free forward end of the cantilevered arm and extending vertically from a point below a lower surface of the cantilevered arm to a point at a preset distance above the upper surface of the cantilevered arm, and a substantially horizontal bleacher-type seat rigidly connected to the front riser and extending rearwardly from the front riser toward the rear riser; and

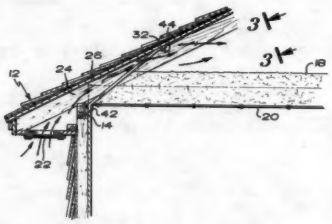
a front support extending below both the lower surface of the cantilevered arm and a lower edge of the front riser, to a position to engage an upper surface of the seat of an adjacent row below for supporting the seat, front riser, tread panel and cantilevered arm when the structure is in the retracted position with the rows superposed vertically above each other.

4,565,037

INSULATION HOLD-DOWN DEVICE

Robert W. DeSchane, 331 - 4th Ave. SW., Perham, Minn. 56573

Filed Aug. 6, 1984, Ser. No. 638,263
Int. Cl.[4] E04B *7/18, 7/02*
U.S. Cl. 52—95 **4 Claims**



1. An insulation hold-down device in combination with a structure comprising a plurality of spaced apart joists, insulation located between said joists, a bearing plate and a roof panel, said hold-down device comprising:

an elongate insulation hold-down panel positioned between and substantially parallel to a pair of said joists and having first and second ends, said hold-down panel having a width dimension substantially narrower than the spacing between adjacent joists,

a first attachment flange integral with said first end and extending at an angle with respect to said panel,

a second attachment flange integral with said second end and extending at an angle with respect to said panel,

means engaging said first flange and attaching the latter to said bearing plate, and

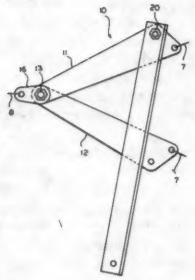
means engaging said second flange for attaching the latter to said roof panel whereby said hold-down panel depresses said insulation located between a pair of joists to form an air passage adjacent said roof panel.

4,565,038

YOKE FOR USE WITH GUYED STRUCTURES

Arnold M. Milbright, Red Wing, and Peter A. Hampe, Theilman, both of Minn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,825
Int. Cl.[4] E04H *12/20;* **E04B** *1/00*
U.S. Cl. 52—146 **14 Claims**



1. A guy yoke for use in a guyed structure to terminate two support guys coupled to said structure and to transfer loads exerted on said support guys to anchor means, said guy yoke comprising:

a first arm;

a second arm;

first means for pivotally coupling one end of said first arm to one end of said second arm, said first means being coupleable to said anchor means;

a spreader arm;

a first shear pin coupling one end of said spreader arm to the other end of said first arm;

a second shear pin coupling the other end of said spreader arm to the other end of said first arm;

second means adapted for coupling said other end of said first arm to a first support guy;

third means adapted for coupling said other end of said second arm to a second support guy;

said spreader arm maintaining said first and second arms in a first predetermined relative position when forces exerted on said yoke by said first and second support guys are below a predetermined force;

at least one of said shear pins being sheared when said forces exceed said predetermined force whereby said spreader arm no longer maintains said first and second arms in said first relative position and said first and second arms assume a second position relative to each other.

4,565,039

FLOOR STRUCTURE FOR REDUCING VIBRATION

Sadao Oguro, Chofu; Yukio Sakagami, Mitaka, and Takayuki Ando, Yokosuka, all of Japan, assignors to Ohbayashi-Gumi, Ltd., Osaka and Tokico Ltd., Kanagawa, both of, Japan

Filed Mar. 7, 1984, Ser. No. 587,000
Int. Cl.[4] E02D *27/34;* **E04H** *9/02*
U.S. Cl. 52—167 **7 Claims**

1. A floor structure for reducing vibration, said structure comprising:

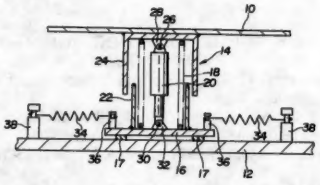
a panel for mounting a load thereon and positioned over a base floor;

a plurality of shock absorbers disposed between said panel and said base floor and elastically supporting said panel;

each said shock absorber comprising a base plate mounted on said base floor in such a manner that said base plate is slidable in the horizontal direction with respect to said base floor, a longitudinal spring fitted between said panel

and said base plate, and a damper having a first end swingably connected to said base plate and a second end swingably connected to said panel; and

at least one of said shock absorbers being provided with a



plurality of horizontal springs maintaining said one of said shock absorbers at a predetermined position with respect to said base floor when no vibration occurs, each said horizontal spring having a first end secured to said base plate and a second end secured to said base floor.

4,565,040

UNIT CURTAIN WALL

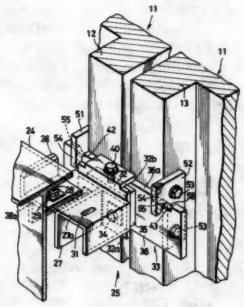
Hiromitsu Kaminaga, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,162

Claims priority, application Japan, Apr. 14, 1983, 58-54781[U]

Int. Cl.⁴ E04H *1/00*

U.S. Cl. 52—235 **8 Claims**



1. A unit curtain wall comprising:

(a) a plurality of curtain wall units;

(b) a pair of first and second engagement portions disposed on horizontally adjacent vertical edges of each pair of adjacent curtain wall units; and

(c) a fastener adapted to be adjustably mounted on a building frame and supporting said pair of adjacent curtain wall units, said fastener having a pair of first and second slots receiving said first and second engagement portions, respectively, said first slot having a width small enough to prevent said one engagement portion from moving horizontally parallel to said curtain wall units, said second slot having a width large enough to allow said second engagement portion to move horizontally parallel to said curtain wall units, whereby one of said pair of adjacent curtain wall units is postionally movable with respect to said fastener in a direction horizontally parallel to said curtain wall units.

4,565,041

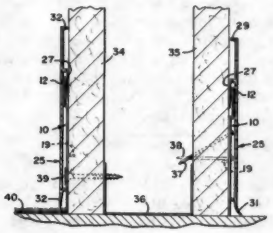
MOVABLE PARTITION BASE ATTACHMENT

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed May 9, 1983, Ser. No. 492,894

Int. Cl.⁴ E04B *1/00*

U.S. Cl. 52—288 **8 Claims**



1. A base trim and attachment assembly for mounting at a lower base of a wall panel, comprising,

a base attachment clip formed of sheet metal having a body portion, an offset margin substantially parallel to said body portion, an integral barb extending laterally from said body portion and adapted to penetrate the surface of said wall panel, and an elongate aperture of uniform width throughout provided in the body portion of said base attachment clip to receive a nail to be engaged in said wall panel at an acute angle,

the body portion of said attachment being provided with longitudinal stiffening ribs each having an upper end and a lower end, the lower end of said longitudinal stiffening ribs being cut to provide detents, and

a base trim member having a body portion and a flange offset from said body portion defining a pocket received in the offset margin of said base attachment clip for retaining said base trim in mounted position on said wall panel, said base trim being provided with a lower rib engaging the cut ends of said longitudinal stiffening ribs and to be detained thereby, said base trim being readily demountable from said base attachment clip.

4,565,042

PLUG CONNECTION FOR BOARDS ABUTTING AT AN ANGLE

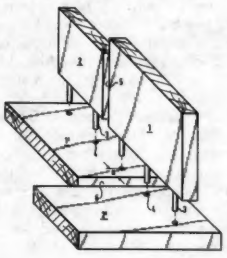
Florian von Poschinger-Camphausen, Froschhausen 33, 8110 Murnau/Obb., Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 571,200

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1983, 3301301; Mar. 22, 1983, 3310370

Int. Cl.⁴ E04C *1/14*

U.S. Cl. 52—585 **8 Claims**



1. Boards connected at an angle, preferably a right-angle, to

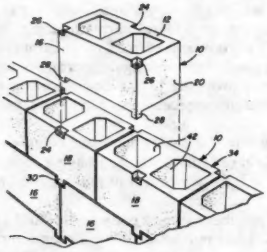
each other and of which boards at least one is provided with spaced holes on a line across its face and at least one other board is provided in a planar edge with holes aligned with the holes of the first-mentioned board, and connecting pins being frictionally held in the holes of said boards, characterised in that in the planes defined by the boards at an angle to at least one of the other boards of different width and substantially the same total width are arranged so that the boards in one plane cover the gap between the boards in the other plane, the narrower boards being provided with at least two holes and the wider boards being provided with at least three holes and the spacing of the holes in all of the boards being equal and the spacing (a) of the outer holes from the nearest board edges in lines drawn through the holes being less than half the spacing of the holes from each other.

4,565,043

BUILDING BLOCK WITH REINFORCEMENT AND/OR POSITIONING LUGS AND RECESSES

Joseph A. Mazzarese, 6263 SW. 44th St., South Miami, Fla. 33155

Filed Sep. 2, 1983, Ser. No. 528,852
Int. Cl.[4] E04C *1/10*
U.S. Cl. 52—593 **15 Claims**



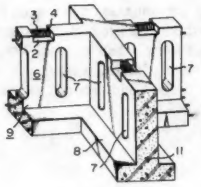
1. A plurality of building blocks for compact interfitted stacking in vertically aligned relation during storage and transport and also for interfitted engagement between adjacent courses of blocks when forming a wall incorporating lengthwise staggered adjacent courses of blocks, each of said blocks including rectangular top and bottom parallel faces, parallel front and rear side surfaces and opposite end surfaces, said bottom and top faces including coacting outwardly projecting and opening projections and recesses, respectively, said top face recesses in each of said blocks including a single central recess opening upwardly through the longitudinal mid-portion of the longitudinal edge of the block top face adjoining one side surface of said block and also opening horizontally outwardly of the longitudinally mid-portion of the upper marginal edge of said one side surface and a single pair of end recesses opening upwardly through the terminal end portions of the longitudinal edge of said top face adjoining the other side surface of said block and also opening horizontally outwardly of the adjacent terminal ends of the upper edges of the corresponding side and end surfaces of said blocks, said bottom face projections, on each block, including a single central projection projecting downwardly from the longitudinal mid-portion of the longitudinal edge of the bottom face adjoining said one side surface of said block and a single pair of end projections projecting downwardly from the terminal end portions of the longitudinal edge of said bottom face adjoining the other side surface of said block, said recesses and projections of said blocks being positioned for interfitting engagement with the projections and recesses of vertical adjacent blocks when said blocks are vertically stacked in substantially full vertically registered positions and said front surfaces of said blocks face in the same direction and also for interfitting engagement with the projections and recesses of adjacent blocks when said blocks are disposed in a horizontal course of blocks vertically sandwiched between stacked courses of similar end aligned blocks and adjacent courses of blocks are lengthwise staggered relative to each other and the front surfaces of the blocks of adjacent courses face in opposite directions.

4,565,044

METHOD OF FORMING BUILDING FOUNDATION WITH VENTS

Susumu Takahara, 1217, Ijiri 3-chome, Minami-ku, Fukuoka-shi, Fukuoka-ken, Japan

Division of Ser. No. 313,194, Oct. 20, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 587,851
Claims priority, application Japan, Feb. 27, 1981, 56-27579[U]
Int. Cl.[4] E04B *1/16, 1/70*
U.S. Cl. 52—741 **8 Claims**



1. A method for forming a wooden building foundation assembly including a concrete foundation provided on the top with a plurality of ventilation areas in spaced relationship along the length of the foundation and a wooden sill built on the concrete foundation, comprising the steps of placing concrete into a foundation mold to form the concrete foundation, forming pairs of opposing recesses on the top of the concrete foundation on the opposite sides of the foundation while the concrete is in a partially solidified condition with the two opposing recesses in each pair being positioned spaced from each other, forming an intermediate perforated communication wall between the opposing recesses of each pair during said step of forming pairs of opposing recesses, and building the wooden sill on the concrete foundation after solidification of the concrete.

4,565,045

WRAPPING DEVICE

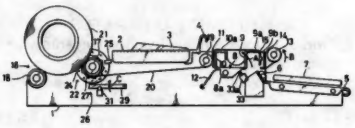
Shigeru Ikemoto, 36-banchi Honmaeda-cho, Nakagawa-ku, Japan

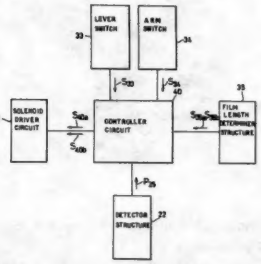
Filed Mar. 7, 1983, Ser. No. 473,111
Claims priority, application Japan, Mar. 11, 1982, 57-38811; Mar. 31, 1982, 57-54392; Oct. 8, 1982, 57-177974
Int. Cl.[4] B65B *57/02*
U.S. Cl. 53—64 **4 Claims**

1. A wrapping device comprising
(a) a frame having a pair of rollers for rotatably supporting a film roll and a spaced film withdrawal roller rotatably carried therein for withdrawing film from the roll;
(b) a top cover member forming the top surface of said frame and on which a product can be partially wrapped with film as the film is withdrawn from the film roll;
(c) an elongated rocking bar rockably mounted on said frame, a portion of said rocking bar being biased by the film to press against the film withdrawal roller with the film sandwiched therebetween, the rocking bar being pivoted by the film from an initial position to a switch activating position;
(d) a press roller pivotally mounted on the frame in position to receive the partially wrapped product, the press roller being pivotally moved upon contact by the product;
(e) a means operatively connected to one of said pair of rollers for detecting the length of withdrawn film and to produce a detector signal in accordance therewith;

(f) a control circuit means operatively connected to said means for detecting the length of withdrawn film for receiving the detector signal and comparing it with a predetermined value, said control circuit means being adapted to produce a primary or secondary lock signal when the detector signal corresponds with the predetermined value, said control circuit means being further adapted to compare the detector signal with the secondary predetermined value after comparing the detector signal with the primary predetermined value and producing the primary lock signal;

(g) a locking means operatively connected to said roller of





said pair of rollers for receiving said primary or secondary lock signal to lock one of said rollers to prevent the film from being further withdrawn;

(h) a first lever switch adjacent to and actuated by the rocking bar when the rocking bar is pivoted to its said switch activating position, the first lever switch being actuated to release the locking means from the influence of the primary lock signal; and

(i) a second lever switch adjacent to and actuated by said press roller when the press roller is pivotally moved by the product, the second lever switch being actuated to release the locking means from the influence of the secondary lock signal.

4,565,046

APPARATUS FOR MANUFACTURING POCKETED COIL SPRINGS

Walter Stumpf, Dunwoody, Ga., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Dec. 24, 1984, Ser. No. 685,573
Int. Cl.⁴ B29C *65/08, 65/18;* B65B *9/08*
U.S. Cl. 53—114 **7 Claims**

1. An apparatus for making a series of pocketed coil springs comprising:

means defining a guide path for receiving a fabric strip for longitudinal movement therealong;

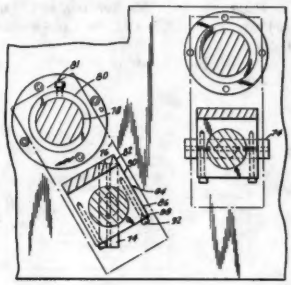
drive means for advancing a fabric strip intermittently along said guide path;

inserter means adjacent said guide path for depositing a compressed coil spring between plies of a fabric strip;

first weld head means operatively associated with said guide path means for thermally welding said plies together along a weld line extending in the longitudinal direction;

second weld head means operatively associated with said guide path means for thermally welding said plies together along a weld line extending transversely of a longitudinally moving strip;

the improvement comprising means for rotating one of said weld head means about a first axis, means for rotating said



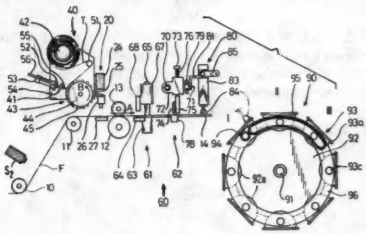
one of said weld head means about a second axis parallel to and located a selected distance from said first axis, whereby the distance between said first and second weld head means can be varied while their orientation with respect to said guide path means remains the same.

4,565,047

APPARATUS FOR PACKAGING FOLDED HOSIERY

Masao Nishikawa, Katsuragi, and Seiichi Saibe, Kashihara, both of Japan, assignors to Monarch Knitting Machinery Corporation, Glendale, N.Y. and Takatori Machinery Mfg. Co., Ltd., Osaka, Japan

Filed Sep. 12, 1983, Ser. No. 531,342
Claims priority, application Japan, Sep. 18, 1982, 57-162734
Int. Cl.⁴ B65B *9/08, 25/20*
U.S. Cl. 53—137 **13 Claims**



1. Apparatus for packaging folded hosiery in a pouch, said apparatus comprising pouch forming means to automatically form pouches and pouch closing flaps of a lengthwise extending sheet of plastic film of indefinite length doubled back on itself along a lengthwise extending off center fold line to provide a pair of doubled film layers of the film extending from the fold line and to provide a single layer flap of the film in lateral extension of one of the doubled film layers, means for applying one face of a double-faced adhesive tape to the other of the doubled film layers, means for automatically inserting folded hosiery into the so formed pouches with the double-faced adhesive tape applied to said other of the doubled film layers, and means for thereafter closing the pouches with the flaps so that the flaps are adhesively attached to the other face of the double-faced adhesive tape.

4,565,048

CONVERTIBLE-FORMAT PACKAGING MACHINE

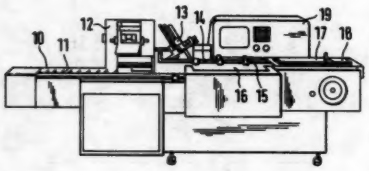
Günther Lade, Winnenden-Birkmannsweiler, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 16, 1985, Ser. No. 691,771

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1984, 3410685

Int. Cl.[4] B65B *59/00*

U.S. Cl. 53—201 8 Claims



1. A packaging machine having devices which are adjustable in accordance with a format for delivering the products to be packaged and for transporting, shaping and handling the packaging material, further including a plurality of conversion points in said devices for adjusting the components thereof in accordance with the size and shape of the products and packaging material, and a control unit in which adjustment values for individual conversion points for a given format are stored and can be data processed in accordance with a program, characterized in that one of a plurality of code carriers arranged to identify the particular conversion point is associated with each of said individual conversion points, a movable code reader connected with said control unit connectable to at least one of said code carriers, and further that said control unit generates an adjustment signal only when said movable code reader agrees with the code which is coupled with the adjustment value made available at that time by said control unit.

4,565,049

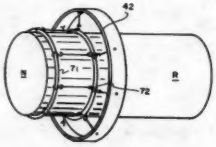
METHOD AND APPARATUS FOR WRAPPING PAPER ROLLS

John DeLigt, and Willem A. Nikkel, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 970,221, Dec. 18, 1978, Pat. No. 4,505,090. This application Oct. 18, 1984, Ser. No. 662,137

Int. Cl.[4] B65B *47/00*

U.S. Cl. 53—415 3 Claims



1. A method of protectively wrapping a cylindrical article having a substantially circular end face and cylindrical surface about a cylindrical axis of revolution by capping said end face with a header wrapping sheet having a central covering area coextensive with said end face and a flange area about and radially beyond the periphery of said central area, said method comprising the steps of:

A. Aligning said header wrapping sheet parallel-planar with and adjacent to said article end face;

B. Coaxially aligning said article and header wrapping sheet with a radially tensioned planar element comprising a plurality of concentric resilient bands connected radially in a common plane by cable means each band of said plurality having a respective spring rate for applying substantially the same constrictive force as other bands in said plurality to said cylindrical surface when expanded thereabout;

C. Coaxially drawing said planar element against said header sheet and end face;

D. Constrictively girdling said header wrapping sheet flange area against said cylindrical surface with at least one resilient band drawn from the concentric plurality in said planar element.

4,565,050

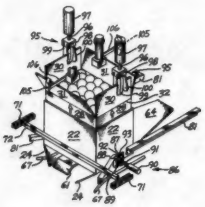
CASE CLOSING APPARATUS

Charles R. Norris, Vista, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Nov. 30, 1984, Ser. No. 676,768

Int. Cl.[4] B65B *7/20*

U.S. Cl. 53—491 8 Claims



1. A method of closing and forming a telescoped container filled with a product,

said telescoped container having inner and outer telescoped members,

said inner member having side panels and closure panels extending upwardly from said side panels,

said closure panels being joined to said side panels by score lines located below the level of said product, comprising,

supporting said telescoped container,

grasping a pair of said closure panels and raising said inner member upwardly until said score lines are above said product,

closing the remaining closure panels of said inner member,

releasing said pair of closure panels,

closing said pair of closure panels,

securing said pair of closure panels and remaining closure panels together,

vibrating said telescoped container while forcing said inner member into said outer member.

4. Apparatus for closing and forming a telescoped container filled with a product,

said telescoped container having inner and outer telescoped members,

said inner member having side panels and closure panels extending upwardly from said side panels,

said closure panels being joined to said side panels by score lines located below the level of said product, comprising

means for supporting said telescoped container,

means for grasping a pair of said closure panels and raising said inner container upwardly until said score lines are above said product,

means for closing the remaining closure panels of said inner member,

means for releasing said pair of closure panels,

means for closing said pair of closure panels,

means for securing said pair of closure panels and remaining closure panels together,

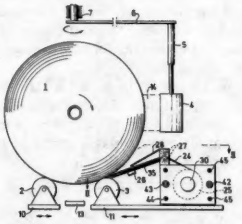
means for vibrating said telescoped container, and

means for forcing said inner member into said outer member.

4,565,051
METHOD AND APPARATUS FOR WRAPPING CYLINDRICAL ARTICLES

Karl J. Back, Hargs Säteri, S-194 90 Upplands-Väsby, Sweden

Filed Oct. 29, 1982, Ser. No. 437,521
Claims priority, application Sweden, Nov. 3, 1981, 8106503
Int. Cl.[4] B65B *11/04, 11/58, 13/02*
U.S. Cl. 53—441 8 Claims

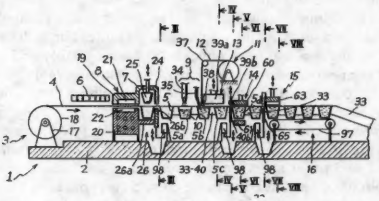


1. A method of wrapping a cylindrical article at a wrapping station, including rotating the article about an axis of the article and winding a stretch film round the article substantially in the axis plane of the article, the improvement comprising; placing a web-like wrapping material against a surface of the cylindrical article for rolling out the wrapping material against the cylindrical article by rotation of the cylindrical article and by simultaneously winding the stretch film over the material web on the cyclindrical article; interrupting winding of the stretch film at a predetermined position; continuing rotation of the article so that the stretch film is laterally reversed; and, winding the film in the opposite winding direction.

4,565,052
PROCESS AND INSTALLATION FOR PACKAGING A PRODUCT

Jean-Claude Hautemont, Gif-sur-Yvette, France, assignor to Societe a Responsabilite Limitee dite, Les Ulis, France

Filed Jun. 7, 1983, Ser. No. 502,013
Claims priority, application France, Jun. 14, 1982, 82 10353
Int. Cl.[4] B65B *3/02, 3/06*
U.S. Cl. 53—453 13 Claims



1. A process for packaging a product comprising the steps of:

longitudinally advancing a thermoplastic base web downstream, step by step, through a plurality of work stations;

heating successive zones of the base web to soften the base web;

forming a row of receptacles in each successive zone of the base web in a forming station having a mobile transverse part;

filling a row of receptacles with a product through openings in the receptacles;

covering the openings of filled receptacles with a covering web;

sealing the covering web to the base web in a sealing station including a lower sealing support having a mobile transverse part;

cutting out the filled and sealed receptacles from the base and covering webs in a cutting station including a lower cutting tool having a mobile transverse part;

supporting the receptacles and corresponding zones of the base web between the different work stations by support and guide rails extending parallel to the direction of advance of the base web and the receptacles;

lowering the mobile parts of the forming station, the sealing station, and the cutting station to clear the path of advance of the receptacles;

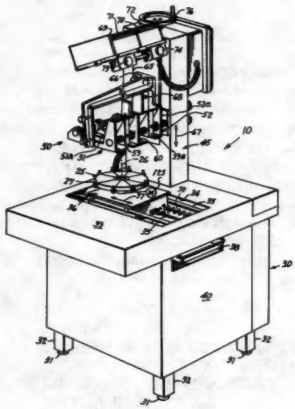
using sections of the support and guide rails in the sealing station as fixed parts of the lower sealing support; and

using other sections of the support and guide rails in the cutting station as fixed parts of the lower cutting tool, and to support the cut-out receptacles.

4,565,053
PASTRY PROCESSOR TO DIVIDE PASTRIES AND INSERT SEPARATORS

Ronald O. Browne, 2420 Calle Galacia, Santa Barbara, Calif. 93103, and William E. Hertzberg, Santa Barbara, Calif., assignors to Ronald O. Browne, Santa Barbara, Calif.

Filed Mar. 29, 1984, Ser. No. 594,695
Int. Cl.[4] B65B *63/00*
U.S. Cl. 53—516 15 Claims



1. A pastry processor for forming a separation in a pastry body, and inserting a separator in said separation, comprising: a base frame; a rotary turntable mounted to said base frame adapted to rotate around a vertical axis as a center, said turntable being adapted to support a pastry for rotation therewith; a head column mounted to said base frame; a vertically extending blade track on said head column; a blade carrier mounted in said blade track for vertical movement toward and away from said turntable so as to enter and form a separation in a pastry body atop the turntable; a blade mounted to said blade carrier having an edge adapted to part the pastry body; support means for supporting a separator, said support means having a slot to pass said blade, and a support surface at each side of said slot, said surfaces receiving the separator that bridges the slot, said support means being mounted to said head column, and said blade carrier being reciprocable so as to move the blade so that said edge is selectively at an upper elevation above said slot, and at a lower elevation below said slot adjacent to said turntable; motive means adapted to drive said blade carrier selectively upwardly and downwardly to move said edge to and between said elevations; sensing means operatively linked to said blade carrier to sense proximity of said blade edge to

said lower elevation; and control means responsive to said sensing means to cause said motive means to stop driving said blade toward said turntable; said sensing means comprising a depending member contactable with limit means that is vertically fixed relative to said turntable to strike said limit means and be displaced thereby relative to said blade, whereby to actuate said control means.

4,565,054

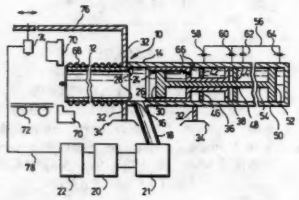
MEAT PACKAGING APPARATUS

Ludwig Piereder, Squire Ct., R.R. #1, Waterloo, Ontario, Canada (N2J 4G8)

Filed Oct. 6, 1983, Ser. No. 539,575

Int. Cl.[4] A22C *7/00*; B65B *3/18*

U.S. Cl. 53—517 **11 Claims**



1. Meat packaging apparatus comprising:

a horn having a forward portion and a rearward portion;

a ram normally contained within said rearward horn portion for reciprocal movement along said horn;

motor means operatively connected to said ram;

a conduit connecting to intermediate portions of said horn for carrying a supply of meat thereto;

cutting means comprising a tubular knife mounted within rearward horn portion for severing meat located at the juncture of said conduit and said horn, said tubular knife serving as a cylinder for said ram when said ram is in a retracted position, and

motor means operatively connected to said cutting means.

4,565,055

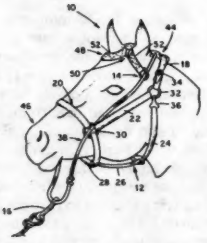
HALTER SAVER

Roy G. Simpson, Cookeville, Tenn., assignor to Adams Plastics, Inc., Cookeville, Tenn.

Filed Sep. 19, 1984, Ser. No. 652,217

Int. Cl.[4] B68B *1/02*

U.S. Cl. 54—24 **6 Claims**



1. A halter saver for use with a halter and halter lead, the halter having cheek rings and a poll strap comprising:

a headpiece for extending over the horse's head having a midsection and two cheek portions, said midsection passing over the poll of the horse and said cheek portions extending downwardly and forwardly along the horse's cheeks through the cheek rings of the halter and being joined together beneath the horse's nose with said headpiece encircling the head of the horse so the halter lead may be attached to said headpiece;

a brow piece for placement over the brow of the horse extending between and being slidably connected to said cheek portions of said headpiece; and

a connector piece for extending over the head of the horse between the ears and having a first end connected to a central area of said brow piece and a second end for connecting to the poll strap of the halter, said connector piece being slidably attached to the midsection of said headpiece at a location on said connector piece intermediate said first and second ends;

whereby the poll strap of the halter is maintained at the poll of the horse and said headpiece is free to slide with respect to said connector piece, brow piece, and halter and is operable to apply pressure at the poll of the horse when tension is applied to the halter lead.

4,565,056

SELF-PROPELLED HARVESTER THRESHER

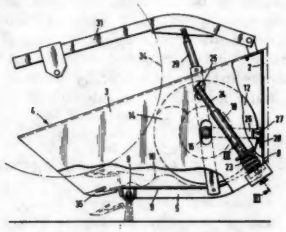
Franz Heidjann, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,923

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1983, 3227975

Int. Cl.[4] A01D *47/00*

U.S. Cl. 56—14.4 **17 Claims**



1. A self-propelled harvester thresher, comprising a liftable and lowerable front inclined transporting channel as considered in a travelling direction; a cutting table connected with said transporting channel and having a rear wall mounted on the latter; and working means including a cutter bar, a drawing roller having a plurality of pins, and a winch liftably and lowerably connected with said rear wall, said cutting table having a bottom composed of a plurality of arms which are turnably supported on said rear wall and arranged at a distance from one another, said plurality of arms including two outer arms which are liftable and lowerable independently of one another, each of said outer arms having a carrying arm which carries said roller and has a bearing point on said carrying arm, located substantially beneath said pins of the drawing roller.

4,565,057

DEVICE FOR PICKING UP CROP FROM THE FIELD

Hermanus H. Vissers, Nieuw-Vennep, and Jan Wondergem, Rijsenhout, both of Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Continuation of Ser. No. 276,046, Jun. 22, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 524,700

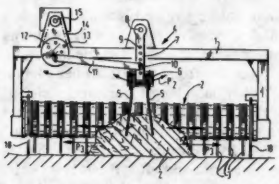
Claims priority, application Netherlands, Jul. 1, 1980, 8003794

Int. Cl.[4] A01D *78/04*

U.S. Cl. 56—364 **12 Claims**

1. A device for picking up crop piled in windrows, comprising a frame movable across a field, means for picking up crops, said means being elongate to extend on either side beyond a

windrow and carried by and extending transversely of said frame with respect to the direction of movement thereof, and a driven means disposed in front of said means for picking up crops at a height above and out of contact with the ground for knocking down a windrow and spreading the crop in such



windrow in a transverse direction substantially parallel to and in uniform distribution across the width of said means for picking up crops, said driven means travelling back and forth along a transverse path parallel to said means for picking up crops.

4,565,058

MAKE-READY UNIT FOR MAKING A THREAD END READY

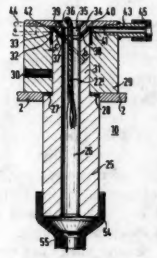
Joachim Rohner; Reinhard Mauries, and Heinz Zumfeld, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 11, 1985, Ser. No. 710,101

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1984, 3408668

Int. Cl.⁴ B65H *69/06;* **D01H** *15/00;* **D02J** *1/08*

U.S. Cl. 57—22 **9 Claims**



1. Make-ready unit for making a thread end ready preparatory to connecting it with another thread end in a thread splicing device, the make-ready unit having a thread splicing device, the make-ready unit having a thread channel formed in a hollow body and traversible by a gas flow produced by injected gas, the thread channel being open at both ends for receiving the thread end transitorily therein, comprising a pressure-gas guiding device formed as a first ring channel surrounding the hollow body and having at least one pressure-gas supply location, the thread channel being formed with a thread inlet end through which the thread end is received and having a funnel-shaped flaring portion at said thread inlet end extending from a main cylindrical part of the thread channel, and a likewise funnel-shaped cover formed with a central opening and covering said funnel-shaped flaring portion of the thread channel in such manner that a second ring channel defined by conical surfaces extends from said first ring channel to said main cylindrical part of the thread channel.

4,565,059

SPLICING DEVICE FOR SPUN YARNS

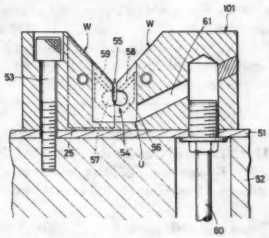
Hiroshi Mima, Joyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed May 16, 1984, Ser. No. 611,102

Claims priority, application Japan, May 17, 1983, 58-86049

Int. Cl.⁴ D01H *15/00*

U.S. Cl. 57—22 **9 Claims**



1. A yarn splicing device wherein extremities of ends of two yarns which are inserted in overlapping and oppositely directed relationship in a yarn splicing chamber are acted upon by a whirling fluid flow to splice the two yarns to each other, characterized in that said yarn splicing chamber is substantially divided in an axial direction thereof into two yarn splicing holes which have center axes displaced from each other.

4,565,060

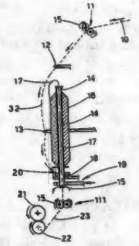
DEVICE TO CARRY OUT DOUBLING-TWISTING OPERATIONS AND TWISTED YARN OBTAINED WITH SAID DEVICE

Dovilio Gordini, Zoagli, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Continuation of Ser. No. 489,075, Apr. 27, 1983, abandoned. This application Feb. 27, 1985, Ser. No. 705,855

Int. Cl.⁴ D01H *7/90, 7/88*

U.S. Cl. 57—58.3 **5 Claims**



1. Device for doubling-twisting material selected from rovings, threads, carded yarns having short fibers, carded yarns having very short fibers, fibers of a staple length for wool and fibers of a staple length for cotton comprising:

means to limit a balloon of the material;

a hollow spindle;

a bobbin which holds a supporting thread surrounding said hollow spindle within which the supporting thread is made to pass, the bobbin being situated substantially axially to and within the balloon;

an axle for the spindle defining an inlet hole for entry of said material leaving the balloons, the inlet hole being located below the bobbin, rotating means for said axle and friction means positioned over the top of said spindle to control the passage of the supporting thread into said spindle.

4,565,061

STRING FOR RACKETS

Enoch J. Durbin, 246 Western Way, Princeton, N.J. 08540

Filed Dec. 12, 1983, Ser. No. 560,400

Int. Cl.[4] D02G *3/40, 3/38, 3/44*

U.S. Cl. 57—234 10 Claims

1. A string wherein said string is characterized by both a break stress which is greater than 20,000 psi and an elastic modulus which is less than twice the break stress, said string comprising a composite made of a plurality of individual fibers, the axis of said individual fibers making a substantial angle to the axis of symmetry of said string, said individual fibers wrapped around a central resilient core, the core and individual fibers being bound together into a string.

4,565,062

THREAD AND YARN END RETRIEVAL NOZZLE

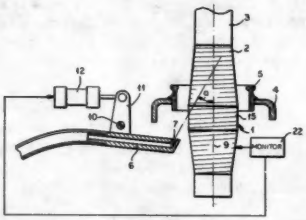
Helmut Nickolay, Göppingen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Apr. 30, 1984, Ser. No. 605,580

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316108

Int. Cl.[4] D01H *13/00, 15/00;* B65H *54/22*

U.S. Cl. 57—305 12 Claims



1. In a textile machine for forming a yarn package, a suction hood at one end of said yarn package for capturing a loose yarn end and a nozzle from which a jet of air flows directed against said yarn package for releasing a yarn end for capture by said hood, the improvement which comprises:

means for pivotally mounting said nozzle for tilting movements about an axis transverse to an axis of said yarn package, which means is capable of selectively varying the angle at which a jet of air is trained by said nozzle against said yarn package during the course of building the yarn package.

4,565,063

METHOD AND APPARATUS FOR FALSE TWIST SPINNING

Herbert Stalder, Kollbrun, and Emil Briner, Winterthur, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Jun. 25, 1984, Ser. No. 624,224

Claims priority, application Switzerland, Jul. 1, 1983, 3633/83

Int. Cl.[4] D01H *5/28*

U.S. Cl. 57—328 32 Claims

1. In a method of false twist spinning comprising the steps of:

drafting a fiber sliver to a desired yarn count in a drafting mechanism having a delivery roller pair and delivering the drafted fiber sliver from the delivery roller pair of the drafting mechanism;

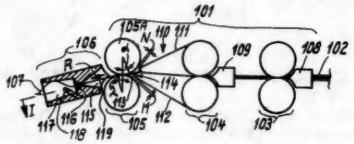
sucking the delivered drafted fiber sliver in a substantially spiral fashion into a converging passage and thereafter taking up such sucked-up drafted fiber sliver by a false twist member;

twisting a part of the drafted fiber sliver to form a false-twisted rotating yarn core with the formation of a spinning triangle by means of the false twist member; the improvement which comprises the steps of;

delivering the drafted fiber sliver from the delivery rollers with a width such that only a part of the width of the drafted fiber sliver is entrained by the spinning triangle and twisted to the false-twisted rotating yarn core; and

sucking up and guiding by means of a suction air stream edge fibers which are not entrained by the spinning triangle in such a manner that, as viewed in the direction of travel of the yarn core, the front end of a fiber of the edge fibers and which fiber has a length corresponding to the average length of the processed fibers is entrained by the rotating yarn core while assuring that this fiber only leaves a nip line of the delivery roller pair after it has been twisted about the yarn core and after it has been entrained in the spinning triangle, whereby the rear end of the fiber is bound into the yarn core.

14. In an apparatus for false twist spinning with a drafting mechanism containing a delivery roller pair and delivering a drafted fiber sliver to a suction passage through which flows a suction air stream and with a false twist member arranged after the suction passage, the suction passage converging towards its



narrowest position in a direction towards the false twist member, the improvement which comprises:

means provided for the drafting mechanism, before said delivery roller pair delivering the fiber sliver to the suction passage, for guiding the fiber sliver in the drafting mechanism in such a manner that the drafted fiber sliver delivered by the delivery roller pair has a width which is greater than the width of a spinning triangle of a yarn core rotated by means of the false twist member;

the spacing between a nip line formed by the delivery roller pair and the narrowest position of the suction passage is not larger than 75% of the average fiber length of the fibers contained in the fiber sliver; and

the suction passage has a converging form such that free front fiber ends of the drafted fiber sliver, which are delivered by the delivery roller pair and which are guided in the suction air stream of the suction passage and are not bound into the rotating yarn core produced by the false twist member, are guided towards the rotating yarn core shortly before the narrowest position of the suction passage such that they are thereby entrained by the rotating yarn core in the region of the spacing between said nip line and said narrowest position of the suction passage.

4,565,064

PROCESS AND APPARATUS FOR PREPARING FASCIATED SPUN YARNS

Takeru Iwasaki, Ichinomiya; Kenji Sasaki, Komaki, and Hiroshi Enomoto, Aichi, all of Japan, assignors to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 17, 1984, Ser. No. 641,844

Claims priority, application Japan, Aug. 19, 1983, 58-152163; Sep. 13, 1983, 58-170164; Sep. 13, 1983, 58-170165

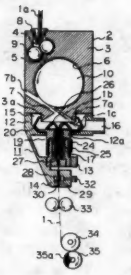
Int. Cl.[4] D01H *1/135, 7/882, 7/90*

U.S. Cl. 57—404 11 Claims

1. A process for manufacturing a fasciated spun yarn, which comprises feeding separate single fibers formed by opening and drafting a continuous staple fiber bundle into a rotor, collecting

and holding the single fibers on a fiber-collecting portion on the rotor and taking out the collected fibers through a center piece by delivery rollers while strongly false-twisting the collecting fibers in the same direction as that of true twists given by the rotor into a twisted yarn by false-twisting apparatus arranged between the rotor and the delivery rollers, wherein the separated single fibers are supplied to a travelling plane for the twisted yarn between the fiber-collecting portion of the rotor and the center piece to entangle some of the single fibers with the twisted yarn in the strongly false-twisted state, and the entangled single fibers are entwined around the periphery of the twisted yarn by subsequent release of the false twists of the twisted yarn.

6. An apparatus for manufacturing a fasciated spun yarn, which comprises opening means for opening and drafting a continuous staple fiber bundle into separate single fibers, a rotating rotor having a hollow rotor shaft providing a yarn



passage and a fiber-collecting surface, a guide member for guiding the separated single fibers from the opening means into the rotating rotor and a pneumatic false-twisting nozzle arranged downstream of the hollow rotor shaft of the rotating rotor coaxially therewith and having a yarn passing aperture extended on the axis thereof, wherein the pneumatic false-twisting nozzle is constructed so that jet air stream from the pneumatic false-twisting nozzle is discharged from the yarn inlet side of the yarn passing aperture, jet apertures opened in such a direction as forming a vortex swirling in a reverse direction to the rotation direction of the rotor formed on the pneumatic false twisting nozzle, a space formed between the bottom face of the rotating rotor and an annular plane defined by a generating line connecting the fiber-collecting portion of the rotating rotor and the apex of the yarn passage of the hollow rotor shaft, and a guide outlet of the guide member arranged between the fiber-collecting portion of the rotor and the apex of the yarn passage of the hollow rotor shaft.

4,565,065

EXHAUST-GAS PARTICLE TREATING DEVICE FOR INTERNAL-COMBUSTION ENGINE

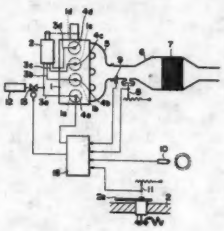
Hideyuki Kimura, and Hitoshi Tomita, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,236
Claims priority, application Japan, Apr. 7, 1983, 58-61265
Int. Cl.[4] F01N *3/02*
U.S. Cl. 60—285 **11 Claims**

1. In an exhaust gas particle treating device for an internal combustion engine having fuel injection nozzles and fuel supplying pipes connected thereto and in which a filter for collection of exhaust gas particles is provided in the exhaust gas system thereof, and the filter is regenerated by burning the exhaust gas particles collected in the filter, the improvement comprising:

a needle valve lift limiting mechanism in at least one of the fuel injection nozzles;

a pressurized fuel accumulating means connected to the injection pipe connected to said one fuel injection nozzle; and



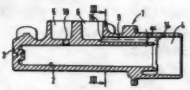
an electromagnetically operated switching valve connected between said fuel accumulating means and the injection pipe.

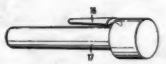
4,565,066

DIE-CASTING MOLD FOR A BRAKE MASTER CYLINDER HOUSING AND A DIE-CAST BRAKE MASTER CYLINDER HOUSING MANUFACTURED WITH THIS MOLD

ITT Industries, Inc., 02, New York, N.Y.; Rolf Weiler, Frankfurt-Sindlingen, and Klaus Bergelin, Wermelskirchen, both of Fed. Rep. of Germany

Filed Jun. 1, 1983, Ser. No. 500,065
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224168
Int. Cl.[4] F15B *15/08*
U.S. Cl. 60—533 **14 Claims**





1. A one-piece die-cast brake master cylinder housing, said housing having a longitudinal axis and said housing comprising:

a master cylinder piston bore disposed coaxially of said longitudinal axis of said housing; and a compensating bore in a wall of said housing, said compensating bore having a longitudinal axis spaced from and parallel to said longitudinal axis of said housing, said compensating bore having one end thereof terminating in a compensating reservoir port disposed transversely relative to said longitudinal axis of said housing and externally of the piston bore and its other end terminating in a sealing chamber formed as an extension at one longitudinal end of said piston bore, said compensating bore being of continuous conical construction, the narrowest area of said compensating bore being adjacent said compensating reservoir port, and a cross section of said compensating bore perpendicular to said longitudinal axis of said compensating bore being substantially reinform.

4,565,067

BRAKE SYSTEM FOR VEHICLES

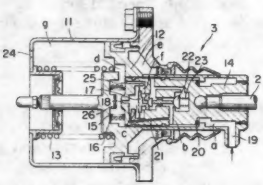
Masanori Tani; Shin'ichi Eto; Takeshi Funakoshi; Susumu Nishikawa, and Kiyoteru Hashikura, all of Aichi, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 26, 1983, Ser. No. 536,270

Claims priority, application Japan, Sep. 30, 1982, 57-147170[U]; Dec. 29, 1982, 57-198485[U]; Feb. 18, 1983, 58-21517[U]; Feb. 18, 1983, 58-21518[U]; Apr. 25, 1983, 58-72714; Apr. 27, 1983, 58-74817; Jun. 1, 1983, 58-81768[U]; Jun. 1, 1983, 58-81769[U]; Jun. 1, 1983, 58-81772[U]; Jun. 15, 1983, 58-90394[U]

Int. Cl.[4] F15B *7/00, 9/10;* B60T *8/18, 13/00*

U.S. Cl. 60—545 9 Claims



1. A brake system for a vehicle comprising:

booster means including a housing, a power piston disposed slidably in said housing for defining within said housing a first chamber communicating with atmosphere and a second chamber, a regulator disposed slidably in said power piston, flow shut-off means communicating with a gas pressure source and opened and closed by movement of said regulator relative to said power piston, flow restriction means provided between said first chamber and said gas pressure source for restricting flow of gas in response to movement of said regulator, a pilot pressure chamber disposed upstream of said flow restriction means, movable means moved by the internal pressure of said pilot pressure chamber thereby permitting communication between said second chamber and said gas pressure source, and a reaction spring disposed between said power piston and said regulator;

a master cylinder connected to said power piston of said booster means to supply braking hydraulic fluid at controlled pressure to front and rear brakes; and

a brake pedal actuating said regulator;

said gas pressure source being a unit supplying air under pressure, said pilot pressure chamber being defined in said regulator for communication with said flow shut-off means, said flow restriction means including a nozzle formed in said regulator for communication with said pilot pressure chamber and a surface formed on said power piston opposite to said nozzle in said first chamber so that the distance between it and said nozzle is variable with the movement of said regulator relative to said power piston, said movable means including first valve means including a diaphragm member forming a wall of said pilot pressure chamber so as to be movable in response to the internal pressure of said pilot pressure chamber and defining a discharge passage permitting communication between said first chamber and said second chamber, and second valve means arranged for normally interrupting communication between said flow shut-off means and said second chamber but being opened in response to the movement of said diaphragm member due to build-up of the internal pressure of said pilot pressure chamber.

4,565,068

TURBOCHARGER

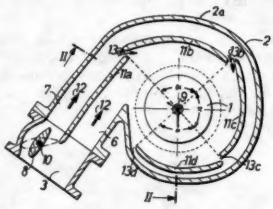
Wilfried Schneider, Glashütten, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Jan. 24, 1984, Ser. No. 573,498

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1983, 3302186

Int. Cl.[4] F02B *37/00*

U.S. Cl. 60—602 6 Claims



1. An exhaust-driven turbo-supercharger for an internal combustion engine, comprising a turbine wheel and a turbine casing surrounding said wheel, said casing having an inflow opening and an outflow opening for the flow of exhaust gases of the engine, said casing having at the inflow side thereof means substantially concentric with the axis of the turbine wheel defining a radially internal spiral path and a radially external spiral path, said paths having inlets opening into said inflow opening of the exhaust-driven turbo-supercharger, a control element for varying the cross-section of said inlet of said radially external path, said means comprising a common partition wall rigidly mounted to said casing, said wall extending about the entire circumferential area of said turbine wheel, the flow cross-section of said radially external path decreasing in the direction of flow of the exhaust, said partition wall in the direction of exhaust flow having a plurality of orifice areas located one behind the other for interconnecting the flow between said internal and external paths, and said orifice areas being spaced apart an equal angular distance from one another in the exhaust flow direction relative to said turbine wheel axis.

4,565,069

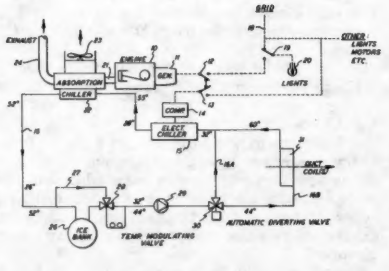
METHOD OF CYCLIC AIR CONDITIONING WITH COGENERATION OF ICE

Calvin D. MacCracken, 150 Van Brunt St., Englewood, N.J. 07631

Filed Nov. 5, 1984, Ser. No. 668,321

Int. Cl.[4] F25D *25/00;* F25B *27/00*

U.S. Cl. 62—66 16 Claims



1. A method of air conditioning a building having alternating periods of high and low cooling loads which comprises

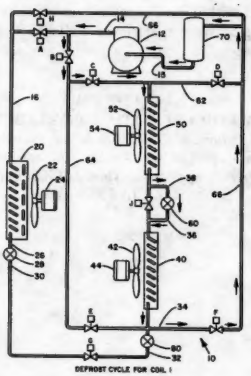
(a) during both high and low cooling load operation the steps of
  i. driving an electric generator by means of a fuel-fired engine, and
  ii. powering a heat-operated chiller with waste heat from said fuel-fired engine;
(b) during low cooling load operation the step of
  i. freezing ice by means of said heatoperated chiller in combination if needed with an electric chiller powered by one of said generator and grid power; and
(c) during high cooling load operation the step of
  i. cooling the building by the melting of said ice in combination with the heat-operated chiller and if needed in further combination with said electric chiller powered by one of said generator and grid power.

4,565,070

APPARATUS AND METHOD FOR DEFROSTING A HEAT EXCHANGER IN A REFRIGERATION CIRCUIT

Glendon A. Raymond, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 1, 1983, Ser. No. 499,958
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—81 **13 Claims**



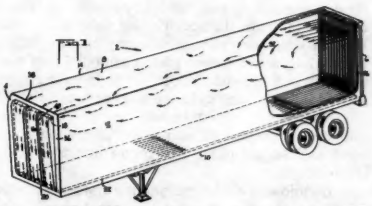
1. A refrigeration circuit including a compressor and an indoor heat exchanger which comprises:
a first outdoor heat exchanger;
a second outdoor heat exchanger;
conduit means including valve means connecting the compressor in a heating mode of operation to direct hot gaseous refrigerant to the indoor heat exchanger and to receive refrigerant from both the indoor and outdoor heat exchangers when it is desirable to supply heat energy to the indoor heat exchanger and in the defrost mode of operation connecting the compressor to discharge hot gaseous refrigerant to either the first or the second outdoor heat exchangers and receiving gaseous refrigerant from the other of said first or second outdoor heat exchangers; and
interconnecting means connecting the first outdoor heat exchanger to the second outdoor heat exchanger including means to allow refrigerant to flow between the first and second outdoor heat exchangers without undergoing a significant pressure drop and restrictor means for creating a pressure drop as refrigerant flows between the first and second outdoor heat exchangers, said means allowing the refrigerant to pass without significant pressure drop when in the heating mode of operation and said means causing the refrigerant to flow through the restrictor means creating a pressure drop when in the defrost mode of operation.

4,565,071

METHOD AND APPARATUS FOR PROVIDING HEATING OR COOLING FOR A VEHICLE

Jerry W. Bartling, Boulder, and James F. Hofstetter, Westminster, both of Colo., assignors to Timpte Industries, Denver, Colo.

Filed Feb. 23, 1984, Ser. No. 582,959
Int. Cl.[4] F25D *17/06*
U.S. Cl. 62—89 **16 Claims**



1. A method for providing heating or cooling for a vehicle comprising:
providing the vehicle with conditioning means for providing air at a desired temperature, said means having an inlet and an outlet;
providing means adjacent to the top of said vehicle and in fluid communication with said inlet and the interior of said vehicle;
inducing substantially all of the air to be conditioned to flow through said means adjacent to the top of said vehicle into said inlet of said conditioning means from said interior of said vehicle;
passing said air through said conditioning means to produce conditioned air;
discharging substantially all of said conditioned air from said outlet of said conditioning means into a passageway adjacent to the bottom of said vehicle and extending from said outlet to a location adjacent to one end of said vehicle;
forming a passageway in a door adjacent to said one end of said vehicle;
flowing said substantially all of said conditioned air out of said passageway adjacent to said bottom of said vehicle and into said passageway formed in said door adjacent to said one end of said vehicle;
flowing said conditioned air in a vertical direction through said passageway formed in said door adjacent to said one end of said vehicle and discharging said conditioned air in a location adjacent to said top of said vehicle; and
inducing said discharged conditioned air located adjacent to said top of said vehicle to flow through normal convection paths from said one end of said vehicle to said inlet of said conditioning means.

4,565,072

AIR-CONDITIONING AND REFRIGERATING SYSTEM

Kenichi Fujiwara, Kariya; Eiichi Hasada, Okazaki, and Hikaru Sugi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

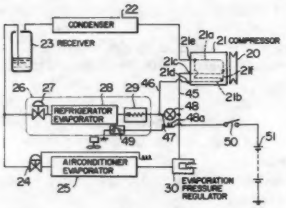
Filed Aug. 23, 1984, Ser. No. 643,382
Claims priority, application Japan, Aug. 25, 1983, 58-155899
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—196.2 **4 Claims**

1. An air-conditioning and refrigerating system including:
a swash plate axial piston refrigerant compressor provided with a main suction port, an auxiliary suction port and a discharge port through which the refrigerant is discharged in compressed gas phase, said compressor comprising a housing defining therein a plurality of axial bores, double-headed pistons axially slidably received in said axial bores, respectively, each piston having opposite heads cooperating with the inner peripheral surface of an

associated bore to define two cylinders, said housing further defining therein a central shaft hole and a swash plate chamber, a shaft rotatably extending through said shaft hole and a swash plate in said swash plate chamber fixed to said shaft for rotation therewith and drivingly connected to said pistons, at least one of the cylinders being communicated with said auxiliary suction port and the rest of the cylinders being communicated with said main suction port, said main suction port being further communicated with said swash plate chamber, said one cylinder being provided with a communication passage for communicating said one cylinder with said swash plate chamber in the final stage of a suction stroke of the piston head in said one cylinder whereby the air-conditioning refrigerant in said swash plate chamber flows therefrom into said one cylinder before the refigerating refrigerant sucked into said one cylinder is compressed therein;

a condenser having an intake side operatively connected to said discharge port of said compressor and adapted to condense the gas-phase refrigerant into liquid-phase refrigerant;

an air-conditioning circuit including a first pressure reducing means operative to expand the liquid-phase refrigerant into atomized air-conditioning refrigerant and an air-conditioner evaporator operative to evaporate the atomized refrigerant at a first evaporation pressure so that air surrounding said evaporator is cooled;



a refrigerating circuit disposed in parallel relationship to said air-conditioning circuit and including a second pressure reducing means operative to expand the liquid-phase refrigerant into atomized refrigerating refrigerant, a refrigerator evaporator operative to evaporate the atomized refrigerating refrigerant at a second evaporation pressure lower than said first evaporation pressure so that said refrigerator evaporator functions for the purpose of refrigeration;

an air-conditioning refrigerant return passage connecting said air-conditioning evaporator to said main suction port of said compressor; and

a refrigerating refrigerant return passage connecting said refrigerator evaporator to said auxiliary suction port of said compressor;

said compressor being constructed such that the evaporated refrigerating refrigerant returned to said auxiliary suction port is mixed in said compressor with the evaporated air-conditioning refrigerant returned to said main suction port before said refrigerating refrigerant is compressed in said compressor to a predetermined pressure level.

4,565,073

FREEZING FRAME FOR A PLASMA CONTAINER

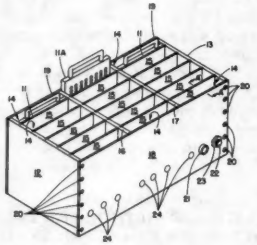
Ardis Lavender, Chappaqua, N.Y., assignor to Armour Pharmaceutical Co., Tarrytown, N.Y.

Filed Feb. 7, 1985, Ser. No. 699,035
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—373 **25 Claims**

1. A freezing frame for suspending and molding a plurality of liquid filled flexible bags within a freezing compartment, said freezing frame comprising:

(a) a parallelpiped frame having a first and a second side wall with a plurality of compartments defined there between, each of said compartments having a planar constraining wall extending between said first and second side walls

(b) a plurality of slideable freezing plates, with at least one plate mounted within each compartment,



(c) cam means defined between the walls of the compartment and the slideable plate for guiding each of said plates downwardly and laterally against said planar wall,

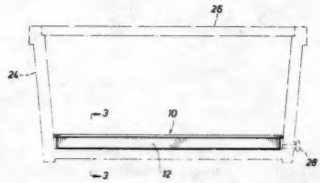
whereby a flexible bag having a fluid to be frozen may be inserted within each compartment and flattened for quick freezing between said planar wall and its associated freezing plate.

4,565,074

ICE TRAY FOR USE WITH A PORTABLE ICE CHEST

Marshall M. Morgan, 8210 Brae Acres, Houston, Tex. 77074

Continuation-in-part of Ser. No. 340,100, Jan. 18, 1982, Pat. No. 4,424,687. This application Dec. 2, 1983, Ser. No. 557,487
Int. Cl.[4] F25D *3/08*
U.S. Cl. 62—457 **3 Claims**



1. In combination:

(a) a portable ice chest having a horizontally extending bottom, front and back side walls extending upwardly from the bottom, and end walls extending upwardly from the bottom between the front and back side walls, the front, back and end walls supporting a removable lid thereon and defining a generally rectangularly shaped portable ice chest, the ice chest receiving and holding a supply of ice for cooling; and

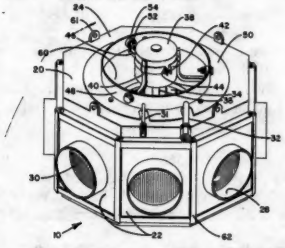
(b) a single piece removable tray nested in place and received interiorly of the portable ice chest wherein said tray is surrounded by the ice chest walls, said tray comprising a generally rectangular planar surface including a pair of integrally formed lengthwise legs there beneath which support said planar surface at an elevated position within the portable ice chest, said legs being inwardly spaced from the lengthwise edges of said rectangular planar surface and extending parallel thereto, said legs being spaced from each other enabling said tray to support weight thereon without tilting, and said planar surface being spaced from the surrounding ice chest walls defining a gap therebetween permitting melting ice to spill over the edge of said planar surface to the bottom of the ice chest.

4,565,075

POLYGON FAN COIL CABINET AND METHOD OF ASSEMBLY

Alan S. Drucker, Dewitt; King H. Kwok, Liverpool, and Charles E. Whipple, Brewerton, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,657
Int. Cl.[4] F25B *39/04*
U.S. Cl. 62—507 10 Claims



1. An apparatus for enclosing and supporting an indoor fan coil having a generally cylindrical heat exchanger with a blower located within the cylindrical heat exchanger, the apparatus comprising:

a fan coil supporting member having a bottom wall defined by a surface with at least one condensate drain outlet for allowing condensate to drain from said supporting member;

a plurality of side members removably secured at one end to said fan coil supporting member and having an inner peripheral surface spaced from the outer vertical surface of the cylindrical heat exchanger, at least one of said side members having an aperture therethrough defining an outlet opening;

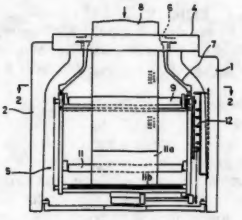
a top member removably secured to the other end of said side member to form an enclosure for the indoor fan coil, said top member having an aperture therethrough concentric with the cylindrical heat exchanger through which to draw air into the enclosure by way of the blower and to discharge said air outwardly through the cylindrical heat exchanger to said outlet openings.

4,565,076

SAFETY DEVICE FOR CIRCULAR KNITTING MACHINES

Koji Tsuchiya, Hyogo, Japan, assignor to Precision Fukuhara Works, Ltd., Kobe, Japan

Filed Oct. 15, 1984, Ser. No. 661,102
Claims priority, application Japan, Nov. 4, 1983, 58-171759
Int. Cl.[4] D04B *15/88, 35/10*
U.S. Cl. 66—151 6 Claims



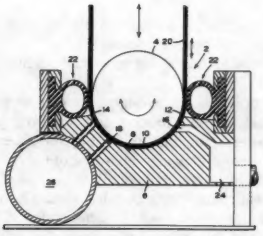
1. A safety device for use in combination with a conventional circular knitting machine of the type having driven rotary take-up rollers to engage with and to advance the fabric being knit by the machine, the machine also having a rotary shaft upon which the so-advanced fabric is secured to and is rolled up upon, the machine also having means to drive the take up rollers and to secure the fabric to the rotary shaft, the safety device operating in combination with the machine in such manner as to automatically stop the machine in the event of failure of the means to drive the take-up rollers with a resultant failure to advance the fabric, the safety device also operating in combination with the machine in such manner as to automatically stop the machine in the event of failure to secure the fabric to the rotary shaft.

4,565,077

LIQUID TREATING APPARATUS

Michael F. Brennan, Leola, and Harold L. Kauffman, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 16, 1981, Ser. No. 321,915
Int. Cl.[4] D06F *3/22*
U.S. Cl. 68—158 1 Claim



1. A fluid treating apparatus for sheet material comprising:

(a) a narrow arcuate passageway,

(1) said passageway being slightly wider than the width of the sheet of material to be treated and being no more than three times the height of the material being treated,

(2) directly adjacent one end of said passageway there being an inlet means and directly adjacent the opposite end of said passageway there being an outlet means, both said inlet and outlet means being spaced a short distance from the ends of the passageway and being on the same side of the passageway,

(3) both ends of said passageway being open to admit the sheet of material for treating and to exit the same sheet of material after treatment,

(b) means providing fluid to the inlet means to place fluid within the passageway so that the fluid will move along one side of the sheet of material as it passes through the passageway, said liquid being removed from the passageway at the outlet means near the opposite end of the passageway just prior to the time the sheet of material exits the passageway, a vacuum source is positioned adjacent the outlet means within the passageway to remove the liquid from the passageway,

(c) the open ends of the passageway forming the entrance and exit from the passageway are air tight because of an inflatable seal pressing against one side of the sheet of material and sealing that one side of the sheet of material while pressing the opposite side of the sheet of material against a solid surface, and

(d) said passageway being an arcuate passageway with one wall of the passageway formed by a rotatable material contacting roll means and the opposite wall of the passageway being formed by a surface spaced from the rotatable roll, said wall formed by the roll and said surface spaced therefrom being parallel and spaced apart the height of the passageway, said surface having said inlet and outlet means with the inlet and outlet means being in the arcuate passageway.

4,565,078

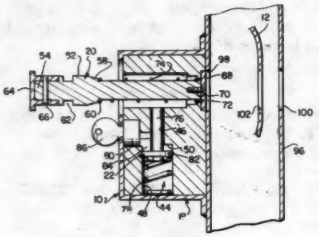
LOCK ASSEMBLY

Martin D. Solomon, 26 Margret Ave., Lawrence, N.Y. 11559

Filed Mar. 4, 1983, Ser. No. 472,037

Int. Cl.[4] E05B *65/08*

U.S. Cl. 70—95 25 Claims



1. A lock assembly for a roll-up door which slides in two, oppositely directed tracks, comprising;

a housing having means for securing said housing to one of the tracks;

a locking bolt slidably mounted in said housing for axial movement between locking and unlocked positions, said bolt having a radially projecting shoulder or on outer surface thereof between inner and outer ends of said bolt and a flange extending radially from said inner end, said flange being removably coupled to said bolt;

spring means, engaging said housing and said bolt, for biasing said bolt toward said unlocked position; and

lug means movably mounted in said housing between a first position engaging said bolt shoulder for retaining said bolt in said locking position, and a second position disengaged from said bolt shoulder for releasing said bolt for axial movement in said housing.

4,565,079

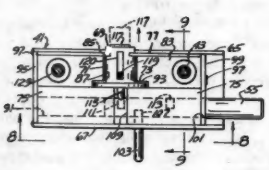
DEADBOLT GATE LOCK

Robert J. Smith, Detroit, Mich., assignor to Smith Locks, Inc., Detroit, Mich.

Filed Jun. 13, 1983, Ser. No. 503,516

Int. Cl.[4] E05B *65/06*

U.S. Cl. 70—134 3 Claims



1. In a deadbolt gate lock having an elongated casing, a manually reciprocal deadbolt guidably mounted within said casting and projectable therefrom to a lock position, an actuator pin connected to said deadbolt and extending outwardly through an elongated slot in said casing, and a push button plunger lock mounted within said casing and having a spring bolt retainingly engageable with said deadbolt for securing said deadbolt in projected position;

the improvement comprising a pair of spaced aligned spacer blocks snugly nested and retained within said casing, having aligned bores guidably receiving said deadbolt, said blocks retainingly engaging said plunger lock;

said push button plunger lock including a cylindrical case and a transverse anchor flange at one end;

said spacer blocks having formed within their inner edges opposed elongated slots retainingly receiving said flange;

said spacer blocks at their inner ends being cut away so as to cooperatively receive and operatively engage opposite sides of said cylindrical case;

said spacer blocks having outwardly opening clearance slots along their length cooperatively receiving said actuator pin;

said casing having top, bottom, side and end walls;

each of said spacer blocks having an elongated base of rectangular cross-section engageable with said side and bottom walls and one end wall;

a central upright elongated web along the top of said base engageable with one end wall;

and a top transverse flange upon and along said web engageable with said side and top walls and one end wall.

4,565,080

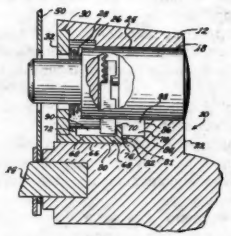
LATCH WITH REMOVABLE LOCK

Herbert Kincaid, Libertyville, and Michael L. Wray, Hanover Park, both of Ill., assignors to The Eastern Company, Naugatuck, Conn.

Filed Dec. 5, 1983, Ser. No. 557,850

Int. Cl.[4] E05B *13/10*

U.S. Cl. 70—215 5 Claims



1. In a locking device having a barrel axially movable between a locking position and an unlocking position, said barrel having a key-operated bolt reciprocable between an extended position and a retracted position, the improvement comprising:

an insert receivable within a chamber in the device, said chamber having a shoulder separating two steps therein, said insert abutting said chambe shoulder with a tongue received within a groove in the chamber shoulder and including a partition defining first and second pockets on either side thereof to receive the bolt when in its extended positions to maintain the barrel in either its locking position or unlocking position respectively, whereby said bolt in its retracted position is clear of said partition.

4,565,081

FORMING MACHINE

Johan Massee, Mercuriushof 8, 3951 EP Maarn, Netherlands

Filed May 2, 1984, Ser. No. 606,159

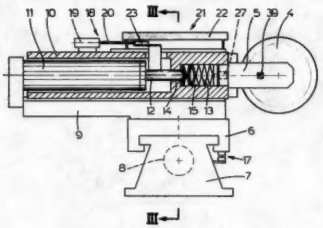
Claims priority, application Netherlands, May 11, 1983, 8301678

Int. Cl.[4] B21D *22/16, 22/18*

U.S. Cl. 72—19 11 Claims

1. Forming machine comprising a rotatingly drivable gripping device for gripping a forming tool and a material plate to be formed, a movable lower slide, a first driving means for moving the lower slide, a first detector for determining the position of said lower slide with respect to a first reference, a movable upper slide mounted on the lower slide, a second driving means for moving the upper slide, a forming roller, a holder mounting said forming roller and supported on the upper slide, a second detector for determining the position of said upper slide, with respect to a second reference, a control

unit controlling the movement of the forming roller by actuating both said driving means, said control unit being connected to said detectors, wherein a memory is connected to the control unit for storing position values of said slides, the control unit being provided to control the movement of the forming roller in dependence on the position values stored in said memory, wherein the forming roller is coupled to the second driving means through a spring means with a given spring characteristic; and a third detector for determining the compression of said spring means, said third detector being connected to the control unit, wherein the control unit operates the second driving means to withdraw the upper slide when a preselected spring compression is exceeded as detected by said third detector.

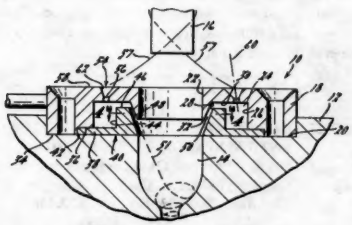


4,565,082

SPRAY APPARATUS FOR METAL FORMING MACHINES

Allan B. Heath, and Richard C. Gossman, both of Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Division of Ser. No. 404,480, Aug. 6, 1982, Pat. No. 4,452,578. This application Sep. 19, 1983, Ser. No. 533,760
Int. Cl.⁴ B21J *3/00*; B21D *37/18*; B05B *1/34*; C03B *4/02*
U.S. Cl. 72—45 **17 Claims**



1. A lubricant spraying apparatus for applying a fluid lubricant to the working surfaces of a forming machine, said working surfaces comprising in part the surfaces of a die cavity and in part the surfaces of an overlying forming tool, said spraying apparatus comprising:

a main housing defining a cavity opening on one side of said housing;

an insert member receivable within said cavity, said insert member having first surface cooperating with said housing cavity to define a manifold chamber and second surfaces, also cooperating with said housing cavity to define nozzle means opening outwardly from said manifold chamber;

inlet passage means in said housing for conducting a supply of lubricant mixture to said manifold chamber, said inlet opening generally tangentially into said chamber so as to impart a circular flow to said lubricant within said manifold chamber; and

a plurality of circumferentially spaced second nozzles in said housing and opening outwardly from said manifold chamber in a direction away from said cavity, said second nozzles being operative to apply said lubricant to said surface of said overlying forming tool;

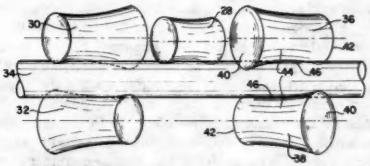
said housing being adapted to be positioned with respect to said die cavity so that said nozzle means will direct the circularly flowing lubricant in a helical flowpath into said cavity.

4,565,083

STRAIGHTENING ROLLS

E. Gordon Thompson, State College, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Apr. 14, 1983, Ser. No. 484,914
Int. Cl.⁴ B21D *3/04*
U.S. Cl. 72—98 **8 Claims**



1. In a roll type straightener for straightening an elongated cylindrical workpiece wherein spaced support means are provided for supporting the workpiece at axially spaced locations for advancing the workpiece axially through the straightener while a transverse load is applied to the workpiece by a deforming means axially intermediate the support means, each said support means comprising:

a pair of rotary support rolls each adapted to engage such a workpiece to support such a transverse load; each of said rolls including a generally concave surface of revolution which is adapted to engage such a cylindrical workpiece in line contact therewith throughout a given axial extent of the workpiece and which includes a minimum diameter throat portion that is offset axially from the axial midpoint of said surface of revolution; and said rolls being located with respect to each other such that the lines of contact thereof with such a workpiece are substantially mutually coextensive with respect to the axial extent of such workpiece and the respective said throat portions of said rolls are offset from each other along the axial extent of such workpiece

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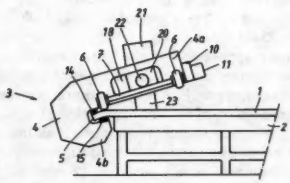
4,565,084

METHOD AND A TOOL FOR BENDING THE EDGE OF THICK SHEET METAL

Finn Jonsson, Ystad, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Nov. 10, 1983, Ser. No. 550,467
Claims priority, application Sweden, Nov. 12, 1982, 8206438
Int. Cl.⁴ B21J *13/00*
U.S. Cl. 72—387 **10 Claims**



1. A bending tool for bending an edge portion of a deform-

able sheet when the deformable sheet is positioned on a support such that the edge portion to be bent projects away from the support, said bending tool comprising:

a generally J-shaped yoke which includes a long leg portion, a short leg portion and an interconnecting base portion, the long leg portion, the interconnecting base portion and the short leg portion providing a recess therebetween, an imaginary central plane extending through said long leg portion in its elongated dimension,

a first sheet-engaging bar connected to said long leg portion to extend generally perpendicularly with respect to said imaginary central plane and into said recess, said first sheet-engaging bar having an operating surface facing away from said long leg portion,

a second sheet-engaging bar connected to said short leg portion so as to extend into said recess, said second sheet-engaging bar having an operating surface facing away from said short leg portion, said first sheet-engaging bar being located in said recess closer to said connecting base portion than said second sheet-engaging bar, the operating surfaces of said first and second sheet-engaging bars being spaced apart a sufficient distance to enable the edge portion of the deformable sheet, which is generally aligned with said imaginary central plane, to fit therebetween,

an extensible force-generating member attached to said long leg portion at a location further from said connecting base portion than said second sheet-engaging bar, said extensible force-generating member being capable, when said bending tool is positioned to operate on a deformable sheet and an edge portion of the deformable sheet is positioned between the operating surfaces of said first and second sheet-engaging bars, of applying a force to the deformable sheet to cause said generally J-shaped yoke to tilt around the edge portion of the deformable sheet and enable said first and second sheet-engaging bars to bend the edge portion of the deformable sheet therebetween.

7. A method of curving an edge portion of a deformable sheet, which method comprises

placing the sheet on a support so that said edge portion thereof projects beyond the support,

locating a J-shaped yoke having an opening defined between one longer and one shorter leg on the projecting edge portion of the sheet in such a way that said edge portion is located within said opening, and extending an extensible drive device connected to the longer leg and pressed against the sheet so that the yoke is tilted relative to the support and the said edge portion is curved as the yoke tilts.

4,565,085

METHOD OF AND APPARATUS FOR MEASURING THE DEGREE OF GAS CHARGE IN A LIQUID SYNTHETIC RESIN COMPONENT

Ivica Grgic, Munich, and Wolfgang Söchtig, Germering, both of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 610,244

Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317486; Oct. 4, 1983, 3336037

Int. Cl.⁴ G01N *9/26, 7/00*

U.S. Cl. 73—19 **5 Claims**

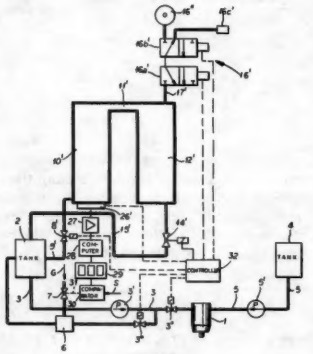
1. In an apparatus for the determination of a parameter representing the gas content of a gas-charged liquid synthetic resin component such as a synthetic resin component utilized in the production of foamed synthetic resins, wherein a sample of the gas charged liquid component is introduced into an upright measuring vessel, is caused to overflow at an overflow to the tip of said vessel, and the hydrostatic pressure of the resulting column of the gas charged liquid component is measured and, from the measurement of the hydrostatic pressure, the parameter is determined, the improvement which comprises:

a closed overflow vessel connected to said overflow of said measuring vessel;

a feed line provided with an intake valve connected with said measuring vessel for delivering said gas charged liquid component to a measuring vessel from said tank;

a discharge valve connecting said overflow vessel to a point below said overflow with said tank for returning overflow liquid component to said tank, said overflow vessel having a port to an upper portion thereof;

a switching valve connected to said port and having a first position connecting said port to a source of pressurized



gas for driving overflow liquid component from said overflow vessel to said tank, a second position for venting said vessels to the atmosphere to apply atmospheric pressure to the top of said column, and a third position wherein said port is blocked; and

means for operating said valves in a predetermined relationship to effect flushing of said liquid component through said measuring vessel, discharge of overflow liquid component from said overflow vessel, and equilibrating the top of said column with atmospheric pressure solely by an operation of said valves.

4,565,086

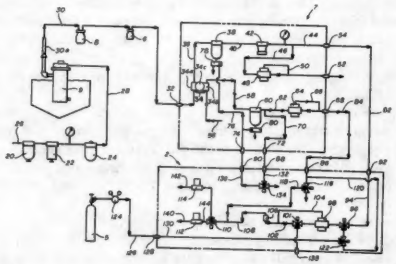
METHOD AND APPARATUS FOR DETECTING ENTRAINED GASES IN FLUIDS

Raymond T. Orr, Jr., Norman, Okla., assignor to Baker Drilling Equipment Company, Orange, Calif.

Filed Jan. 20, 1984, Ser. No. 572,436

Int. Cl.⁴ G01N *25/20*

U.S. Cl. 73—23 **23 Claims**



1. An apparatus for detecting the presence of a gas entrained

in an aqueous fluid circulated through a subterranean well bore, comprising:

a gas gathering means for gathering gas liberated from the circulating fluid for delivery to a sample gas flow line;

a sample flow controller in said flow line comprising means for establishing a constant rate of sample gas flow; means for regulating the relative humidity of the constant rate sample gas flow to a fixed value less than 100%;

sensor means for detecting the presence of gas in a gas sample flow;

means for directing the fixed relative humidity, constant rate sample gas flow to the sensor means;

a dilution flow line communicating with the gas flow line between the sample flow controller and the sensor means for reducing the concentration of the gas supplied to the sensor means and including valve means selectively communicating said dilution flow line with the gas flow line; and

control means in communication with said sensor means and said valve means for establishing communication between the sample gas flow line and the dilution flow line when the concentration of gas in the circulating fluid exceeds a predetermined concentration, whereby the concentration of gas thereafter exposed to the sensor means is less than the predetermined concentration.

4,565,087

METHOD AND APPARATUS FOR RECOGNITION OF KNOCKING IN AN INTERNAL COMBUSTION ENGINE

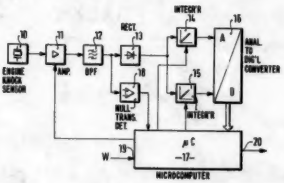
Eckart Damson, Stuttgart; Martin Klenk, Backnang; Winfried Moser, Ludwigsburg, and Heinz Möller, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,152

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319458

Int. Cl.⁴ G01L *23/22*

U.S. Cl. 73—35 **27 Claims**



1. Method of recognizing engine-knock in an internal combustion engine by analysis of electrical signals of a sensor responsive to oscillatory phenomena originating in the combustion chamber of at least one engine cylinder, comprising the steps of:

amplifying said electrical signals;

band-pass-filtering said electrical signals;

deriving from said electrical signals a sequence of function values respectively relating to successive intervals, each of a duration not exceeding a single cycle period of oscillation of said electrical signals each function value of said sequence corresponding to a single oscillation cycle;

comparing said sequence of function values with a reference sequence of reference values, in which sequence successive reference values differ from each other, each of said reference values being used for comparison with only one of said function values and

producing a knock-recognition signal when said sequence of function values does not differ by more than a predetermined difference from said reference sequence of reference function values.

4,565,088

PROCESS AND APPARATUS FOR THE DETECTION OF CHANGES OF COMPOSITION IN A MEDIUM WITH THE AID OF ULTRASOUND

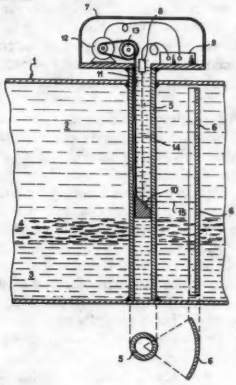
Michel Crambes, Villette de Vienne, France, assignor to Elf France, France

Filed Jan. 30, 1984, Ser. No. 574,971

Claims priority, application France, Jan. 31, 1983, 83 01427

Int. Cl.⁴ G01N *29/02*

U.S. Cl. 73—61.1 R **11 Claims**



1. Process for detecting and locating a change of composition in a medium by means of ultrasound which comprises:

positioning a medium tight tube in the medium, the tube having a mirror which reflects ultrasonic waves along the longitudinal axis of the tube perpendicularly to said axis, said mirror being displaceable to a plurality of points along said axis;

positioning a reflector screen which surrounds a portion of the tube to reflect ultrasonic waves perpendicular to said axis of the tube back to the mirror in said medium a distance of 100 to 400 mm from the tube;

transmitting ultrasonic waves along said axis;

displacing said mirror in said tube to a plurality of said points; and

determining the ultrasonic speed of the medium between the tube and the reflector screen at said plurality of points along said axis.

4,565,089

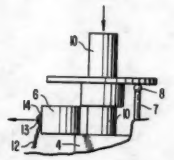
CONSISTOMETER

Henry Arciszewski, Franklin Lakes; Linda A. Porzio, North Haledon, both of N.J., and Bin Y. Chiang, Little Neck, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 18, 1984, Ser. No. 621,961

Int. Cl.⁴ G01N *3/48*

U.S. Cl. 78—82 **26 Claims**



1. A consistometer for measuring the consistency of a deformable sample, comprising:

a support having a means for guiding;

a movable mass adapted to be guided in a downward direction under the force of gravity by said means for guiding;

a means for indicating displacement having a displaceable arm contacting a portion of said movable mass;

and a removable spacer element to suppot said movable mass in a predetermned spaced relation to said support, said removable spacer element being selectively disengageable from said support so as to release said movable mass;

whereby disengagement of said removable spacer element from said support causes said movable mass to drop vertically under the force of gravity against a deformable specimen placed thereunder, so that said means for indicating can indicate depth of penetration into the deformable specimen by said movable mass;

said support including a vertical post supporting a horizontal arm in spaced relation from a base, whereby the specimen can rest upon said base beneath said movable mass for testing;

said means for guiding including an aperture formed in said horizontal arm which extends completely therethrough, said movable mass being adapted to be received within said aperture, whereby said movable mass remains substantially vertically oriented during testing;

said movable mass including a rod having a diameter adapted to be received within said aperture;

said rod having a means for contacting a portion of said displaceable arm attached thereto;

whereby downward movement of said movable mass causes said means for contacting to urge said displaceable arm of said means for indicating displacement such that displacement of said movable mass is indicated by said means for indicating displacement;

said means for contacting including generally horizontally extending body which is attached to a portion of said rod;

said horizontally extending body being attached to said rod at a location above said horizontal arm;

said movable mass comprising an elongated article;

said removable spacer element has an indentation therein adapted to abut said elongated article;

said removable spacer element having a lower surface adapted to slidably rest upon an upper surface of said horizontal arm;

said removable spacer element having an upper surface adapted to slidably support a horizontally extending portion of said movable mass;

whereby said removable spacer element stably supports said movable mass in spaced relation to said horizontal arm.

4,565,090

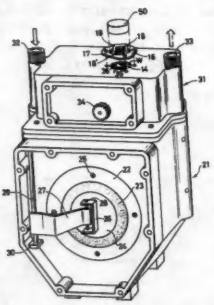
DETECTION DEVICE FOR DETECTING AND INDICATING OPERATION OF A GAS METER

Motohiro Gotanda, No. 1802-10, Nakabyo, Abiko City, Chiba Prefecture, Japan

Filed Oct. 17, 1983, Ser. No. 542,538

Int. Cl.[4] G01F *3/20*

U.S. Cl. 73—198 **3 Claims**



1. In a gas meter comprising a housing provided with a gas inlet and a gas outlet and made of non-magnetic material, a driver section provided with a rotary member which rotates according to the amount of gas flow, and a meter driven by the driver section for indicating the amount of gas flow, a device for detecting whether or not gas is being used in a room or inside a housing, said device comprising a first pair of link arms for transmitting the movement of at least one flow responsive diaphragm and a second pair of link arms for operating at least one changeover valve, said pairs of link arms being swingably attached to a rotary plate, cylindrical magnet attached to a point where the first pair of link arms is swingably attached to the rotary plate; sensor means, comprising a plurality of reed switches disposed in a cylindrical arrangement having a vertical axis, for detecting the rotation of the magnet, said reed switches being disposed on the roof of the housing in a configuration corresponding to the path of rotation of the magnet, and a display means driven by output of the sensor means for indicating that a small amount of gas is being used.

4,565,091

APPARATUS FOR MEASURING THE QUANTITY OF AIRFLOW PASSING THROUGH AN INTAKE PASSAGE OF AN ENGINE

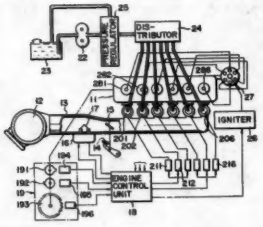
Katsunori Ito, Aichi; Susumu Akiyama, Kariya; Tiaki Mizuno, Toyota; Toshitaka Yamada, and Tomoaki Abe, both of Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 16, 1985, Ser. No. 723,894

Claims priority, application Japan, Apr. 20, 1984, 59-79642; Apr. 25, 1984, 59-83339

Int. Cl.[4] G01M *15/00*

U.S. Cl. 73—118 **13 Claims**



1. An apparatus for measuring the quantity of airflow passing through an intake passage of an engine, comprising:

means for producing a supply electric power;

means disposed in the intake passage and adapted to generate heat while the supply electric power is being applied thereto, thereby measuring the quantity of airflow and burning off dust thereon;

means for producing a first signal indicative of the commencement of the measurement of the airflow quantity;

means for producing a second signal indicative of burning off dust;

means for limiting the duration of the second signal to a predetermined time interval equivalent to the maximum allowable duration for burning off dust;

means for comparing the temperature of the generating means with a reference temperature, said comparing means being adapted to produce a third signal indicative of the heat generating means reaching a predetermined temperature when the difference between the temperature of the heat generating means and the reference temperature reaches a predetermined value; and

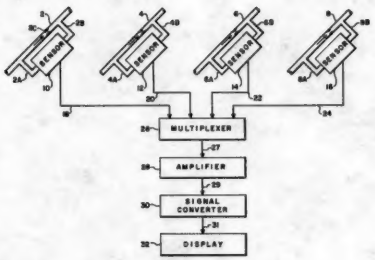
means for applying the supply electric power to the heat generating means during the time interval for the second signal independently of the third signal.

4,565,092

FLOW SENSOR WITH ADJUSTABLE SENSITIVITY

Arlon D. Kompelien, South Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 25, 1984, Ser. No. 654,577
Int. Cl.[4] G01F *1/46*
U.S. Cl. 73—202 20 Claims



1. A flow sensor comprising

a hollow cylindrical container means having an internal compartment,

a first fluid port on said container means communicating with said compartment,

a second fluid port on said container means diametrically opposite to said first port and communicating with said compartment,

differential pressure transducer means located in said compartment and responsive to a differential pressure between said first and second ports to produce an output signal representative of said differential pressure and,

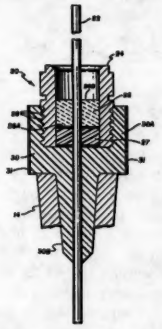
means for selectively rotating said container means on a fixed axis of rotation, said means for rotating including a substantially cylindrical housing having an axis parallel to said axis of rotation of said container means to form an annulus therewith.

4,565,093

METHOD FOR FACILITATING HERMETICITY LEAKAGE TESTING OF AN ELECTRICAL FEEDTHROUGH

Edsel O. Jurva, Anoka, and Richard L. Goodin, Blaine, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 308,308, Oct. 5, 1981, Pat. No. 4,460,664.
This application Mar. 5, 1984, Ser. No. 586,220
Int. Cl.[4] G01M *3/20*
U.S. Cl. 73—40.7 12 Claims



1. A method of manufacturing and testing an electrical feedthrough comprising these steps:

forming an electrically insulating seal between a conductive lead and a metal ferrule through which the lead extends;

positioning gas retaining material body means adjacent to the interior surface of said seal;

molding a plastic body over a portion of the exterior surface of the ferrule, the body means and the pin;

forcing gas through the exposed surface of said seal and into the gas retaining material body means; and

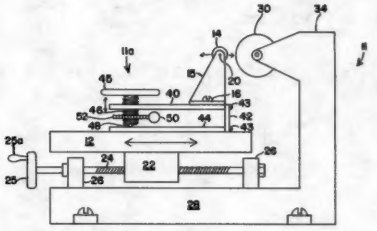
observing the leakage of any gas from said gas retaining material body means through the exposed surface of said seal.

4,565,094

APPARATUS FOR PRECISION PLACEMENT AND PARAMETER MEASUREMENT

Richard D. Sedgewick, 100 Horne St., Dover, N.H. 03820

Filed May 24, 1984, Ser. No. 613,423
Int. Cl.[4] G01D *11/30*
U.S. Cl. 73—432 R 21 Claims



1. Apparatus for precise placement of an object or measurement of a parameter comprising:

a base plate;

a first tilt plate in parallel spaced apart relationship relative to the base plate;

a first hinge plate rigidly secured to respective edges of the base plate and first tilt plate on one side of the respective base plate and first tilt plate, said hinge plate constructed and arranged of rigid elastic material for controlled elastic bending and recovery under applied bending moment stress;

first spreader means operatively coupled to the base plate and first tilt plate on the side of the base plate and first tilt plate opposite the hinge plate, and first spreader actuator means for actuating the spreader means and imparting tilting motion to the first tile plate relative to the base plate by varying the spacing of the first tilt plate relative to the base plate at the side of the first tilt plate and base plate opposite the first hinge plate thereby imparting bending moment stress to the first hinge plate, said first hinge plate constraining the tilting motion on a first tilting axis;

a second tilt plate in parallel spaced apart relationship relative to the first tile plate;

a second hinge plate rigidly secured to respective edges of the first and second tilt plates on one side thereof, said second hinge plate constructed and arranged of rigid elastic material for controlled elastic bending and recovery under applied bending moment stress;

second spreader means operatively coupled to the first and second tilt plates at the side of the first and second tilt plates opposite the second hinge plate, and second spreader actuator means for actuating the second spreader means and imparting tilting motion to the second tilt plate relative to the first tilt plate by varying the spacing of the first and second tilt plates at the side of the first and second tilt plates opposite the second hinge plate thereby imparting bending moment stress to the second hinge plate, said second hinge plate constraining the tilting motion on a second tilting axis;

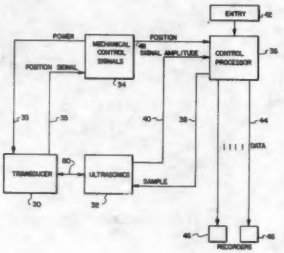
whereby an object may be coupled to the second tilt plate for precision placement or for parameter measurement indication upon actuation of the respective spreader means.

4,565,095

SOUND TRANSDUCER APPARATUS SYSTEM AND METHOD

Glenn M. Light, and William R. Van der Veer, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed May 2, 1984, Ser. No. 606,276
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—621 **19 Claims**



1. A sound transducer apparatus comprising:

sounding means for generation of directional sound energy and for receiving sound energy;

a rotational movable mount means connected to said sounding means for varying the angular direction of sound energy while maintaining a costant distance above a test material surface; and

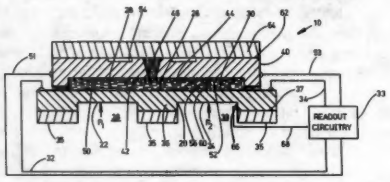
position detection means for determining the direction of generated sound energy.

4,565,096

PRESSURE TRANSDUCER

Thomas A. Knecht, Minnetonka, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Dec. 9, 1983, Ser. No. 559,897
Int. Cl.[4] G01L *9/12*
U.S. Cl. 73—718 **10 Claims**



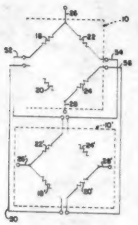
1. A transducer having a first sensing diaphragm and a second sensing diaphram each configured such that a first pressure (Pl) is applied to the first diaphragm and a second pressure (P2) is applied to the second diaphragm, and wherein both diaphragms are formed on a diaphragm wafer and means defining an enclosed common fluid cavity fluidly open to each diaphragm responsive to such pressure, said cavity being filled with a substantially non-compressible fluid such that deflection of the diaphragms is representative of the pressure differential (P1 − P2), the first and second diaphragms being formed on the one substantially flat face of the diaphragm wafer.

4,565,097

METHOD AND APPARATUS FOR TRANSDUCER ERROR CANCELLATION

John Dimeff, San Jose, Calif., assignor to Mark Telephone Products, Inc., Santa Clara, Calif.

Filed May 9, 1984, Ser. No. 608,607
Int. Cl.[4] G01L *1/18*
U.S. Cl. 73—765 **15 Claims**



1. A transducer unit substantially free of undesirable circuit effects of the type which change the operation of the transducer comprising:

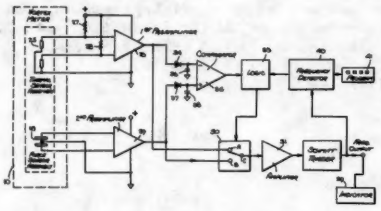
first and second transducers of essentially the same construction and matched undesirable circuit effects and each having a number of circuit elements intercoupled to one another to define a signal input and a signal output, a first one of the circuit elements being coupled to a second one of the circuit elements so that a change in a first property of the first circuit element due to said undesirable circuit effects will result in a change in said first property of the second element in an opposite sense.

4,565,098

HYBRID SENSING SYSTEM FOR VORTEX FLOWMETER

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Sep. 10, 1984, Ser. No. 648,933
Int. Cl.[4] G01F *1/32*
U.S. Cl. 73—861.22 **9 Claims**



1. In a vortex type meter for measuring the flow rate of a fluid passing through a flow tube by generating fluidic oscillations whose frequency depends on flow rate; a hybrid sensing system which renders the meter operative throughout a wide range encompassing a low and high frequency range, said system comprising:

A a thermal sensor exposed to the fluidic oscillations and having a frequency response characteristic which yields a relatively high amplitude signal only in the low frequency range;

B a force sensor exposed to the fluidic oscillations and having a frequency response characteristic which yields a relatively high amplitude signal only in the high frequency range;

C a trigger to generate output pulses at a frequency determined by that of the signal applied thereto; and

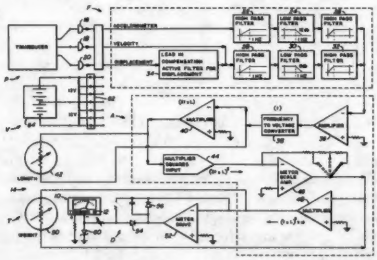
D means to compare the relative amplitudes of said sensors and to select the signal from the sensor having the higher amplitude at the prevailing meter frequency for application to said trigger to provide output pulses whose frequency is indicative of the flow rate.

4,565,099

METHOD AND APPARATUS FOR DETERMINING TENSION IN A CABLE

William S. Arnold, Houston, Tex., assignor to Smiser Industries, Inc., Houston, Tex.

Filed Sep. 4, 1984, Ser. No. 646,802
Int. Cl.⁴ G01L *5/10*
U.S. Cl. 73—862.41 **13 Claims**



11. A method for measuring tension in a cable or like object comprising the steps of:

sensing vibrations occurring in the object;

generating a sensor signal indicative of the sensed vibrations;

normalizing the sensor signal to the lowest frequency component of the sensor signal within the bandwidth of the apparatus;

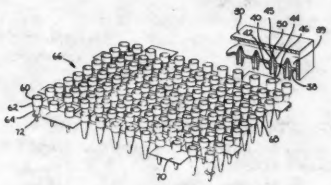
deriving a tension value corresponding to the tension in the object under observation from the normalized sensor signal.

4,565,100

PIPETTE DEVICE

Don W. Malinoff, Granada Hills, Calif., assignor to Culture-Tek, Granada Hills, Calif.

Continuation-in-part of Ser. No. 307,745, Oct. 2, 1981, Pat. No. 4,468,974. This application May 3, 1983, Ser. No. 491,305
Int. Cl.⁴ B01L *3/02*
U.S. Cl. 73—863.32 **13 Claims**



1. A pipette sampler system for removing a plurality of liquid samples from a multi-well tray, comprising:

a housing having a main body portion and a plurality of elongated, outwardly extending collector conduits with a first portion of each conduit configured to be inserted into an associated pipette tip, and a second portion extending into the main body of said housing, said first and second portions having co-axial openings for fluid flow, said opening for fluid flow in said first portion being larger than said opening for fluid flow in said second portion;

a patterned array of tubular pipette tips removably joined to and in flow communication with said array of collector conduits; and

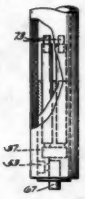
means for forming a vacuum in said housing whereby a predetermined quantity of liquid flows into said pipette tips and said collector conduits.

4,565,101

MOLTEN METAL PIN SAMPLER

Joseph J. Boron, Medina, Ohio, assignor to Midwest Instrument Co., Inc., Hartland, Wis.

Filed Oct. 19, 1983, Ser. No. 543,412
Int. Cl.⁴ G01N *1/18*
U.S. Cl. 73—864.57 **2 Claims**



1. A molten metal sampler for pin samples which is adaptable for both a side entry filling mode or an end filling mode comprises two opposed mold halves, said mold halves being formed from thermosetting foundry sand, each of said mold halves including integrally formed recesses including wall means defining a pair of spaced axially extending recesses, wall means defining a portion of a mixing chamber at the ends of said recesses, with said mixing chamber having an inlet and outlet with said outlet communicating with said pair of axially extending recesses, a wall means defining a longitudinally extending passage communicating with said mixing chamber, inlet and end wall means closing the remote end of said longitudinal passage, and wall means defining a transverse fill passage communicating with said longitudinal recess at a point intermediate the ends of said longitudinally extending passage, a fused quartz fill tube in said longitudinal passage in sealing fit blocking entry of molten metal through said transverse fill passage when said sampler is used in said end filling mode, said mold halves when assembled providing two parallel spaced apertures and fused quartz pin sample molds positively positioned within said apertures and said remote end of said longitudinal passage being removable to enable communication of said passage through the end of said sampler for the end filling mode.

4,565,102

PTO-DRIVING OF DOUBLE-CLUTCH-INCORPORATED TYPE TRANSMISSION

Masayoshi Miyahara, Sakai, and Masao Takagi, Hashimoto, both of Japan, assignors to Kubota, Ltd., Japan

Continuation of Ser. No. 416,703, Sep. 10, 1982. This application May 6, 1985, Ser. No. 731,330
Claims priority, application Japan, Sep. 11, 1981, 56-135622[U]
Int. Cl.⁴ F16H *37/00, 3/38*
U.S. Cl. 74—15.4 **4 Claims**

1. PTO-drive for double-clutch type transmission comprising a double clutch apparatus including:

a running-travel clutch and a PTO clutch having a PTO transmission shaft, said running-travel and PTO clutches disposed in operative juxtaposition relative to one another;

a running-travel main shaft drivable from th running-travel clutch;

a PTO main shaft drivable from the PTO clutch, said run-

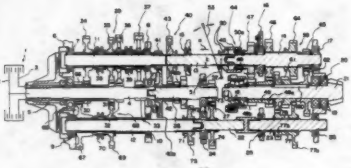
ning-travel shaft being concentrically disposed within said PTO main shaft;

travel-transmission shaft means for transmitting engine power from said running-travel main shaft;

main speed-change means operatively associated with said running-travel main shaft for operatively interconnecting said running-travel main shaft and said travel-transmission shaft means to change running travel speeds, wherein

said running-travel main shaft, said main speed-change means and said travel-transmission shaft means together establish a travel drive line;

first and second gear means for being respectively driven by the PTO main shaft and the running-travel main shaft; and



coupling means movable between a first position for selectively coupling said PTO transmission shaft to said PTO main shaft through said first gear means, and a second position for selectively coupling said PTO transmission shaft to said running-travel main shaft through said second gear means, wherein said running-travel main shaft, said second gear means and said PTO transmission shaft together define a PTO drive line when said coupling means is moved to said second position such that

operation of said main speed change means to effect speed change through said travel drive line does not affect PTO drive speed through said PTO drive line.

4,565,103

CONNECTING ROD BEARINGS FOR A VOLUMETRIC PISTON CHAMBER MACHINE

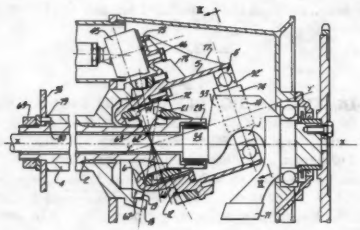
Maurice Brille, 27 rue Parmentier, Nanterre, Hauts de Seine, France

Filed May 10, 1982, Ser. No. 376,349

Claims priority, application France, May 11, 1981, 8109801

Int. Cl.[4] F16H *23/00*

U.S. Cl. 74—60 **22 Claims**



1. A power transmission device for converting reciprocating motion of a plurality of connecting rods each reciprocably disposed within a housing with its respective reciprocation axis parallel to a common central axis and spaced a predetermined distance from said central axis, said plurality of connecting rods reciprocating in a predetermined sequential order about said central axis, said power transmission device comprising:

a power transmission body disposed adjacent to said plurality of connecting rods and pivotally interconnected with each of said plurality of connecting rods such as to wobble about said central axis as said plurality of connecting rods sequentially reciprocate;

a central passageway through said power transmission body, said central passageway having a first portion defining a first opening and a second portion defining a second opening opposite said first opening;

axle shaft means mounted to said housing about said central axis, said axle shaft means having a portion extending through said first opening in said power transmission body;

first outer gear means fixedly disposed on an outer portion of said power transmission body;

second outer gear means interconnected with said axle shaft means, said second outer gear means engaging a portion of said first outer gear means such that said first outer gear means is rotated about said central axis as said power transmission body is wobbled therearound;

first inner gear means fixedly disposed within said first opening of said central passageway and said power transmission body;

second inner gear means disposed within said central passageway of said power transmission body adjacent said first inner gear means and interconnected with said extending portion of said axle shaft means, said second inner gear means engaging a portion of said first inner gear means diametrically opposed to the engaged portions of said first and second outer gear means such that said first inner gear means is rotated about said central axis as said power transmission body is wobbled therearound;

crank means having a first end with a first journal portion rotatably mounted to said housing, said first journal portion having a central axis coaxial with said central axis of said power transmission device, a second end terminating in a second journal portion, said second journal portion having a central axis coaxial with said central axis and further being mounted within said power transmission body between said first and second opening, said second journal portion further being rotatably interconnected with said extending portion of said axle shaft means extending through said first opening in said power transmission body such as to rotate about said central axis, an intermediate portion disposed between said first and second journal portions;

said intermediate portion comprising yoke means fitted thereto, said yoke means constraining said intermediate portion for motion relative to said intermediate portion to permit longitudinal motion of said intermediate portion relative to said yoke means and to permit radial motion of said intermediate portion towards and away from said central axis, said yoke means being rotatably mounted to said power transmission body thereby minimizing the load transmitted between said power transmission body and said crank means; and

means for mounting said first journal portion, second journal portion and said intermediate portion respectively to said housing, axle shaft means and power transmission body.

4,565,104

LINEAR ACTUATOR FOR LARGE-ANGLE MOTIONS

Thomas A. Akin, Smyrna, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Sep. 20, 1982, Ser. No. 420,033

Int. Cl.[4] F16H *27/02, 29/02, 29/20, 21/45*

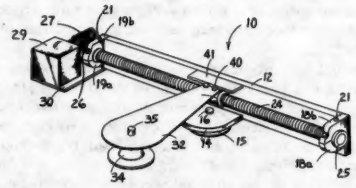
U.S. Cl. 74—89.15 **10 Claims**

1. A linear actuator for rotating a load comprising:

a frame defining a linear path of travel, said frame being pivoted intermediate the ends of said path about a frame pivot axis intersecting said path and normal thereto, said frame pivot axis dividing said path into a first path segment extending on one side of said frame pivot axis and a second path segment extending on the opposite side of said frame pivot;

load support means for supporting said load for pivotal

motion about a load pivot axis parallel to and spaced apart from said frame pivot axis, said load support means including a drive arm extending to a drive point along said path of travel, said drive point and said frame pivot axis being equidistant from said load pivot axis; and



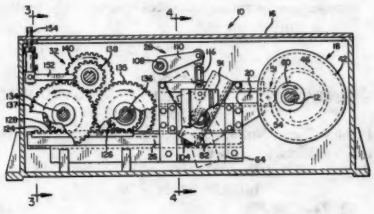
means for driving said drive point of said drive arm along said path of travel from a first location in said first path segment through said frame pivot axis to a second location in said second path segment.

4,565,105

POWER TRANSMISSION APPARATUS

Walter O. Peterson, 875 Classic Pl., Eugene, Oreg. 97401

Filed Sep. 23, 1983, Ser. No. 534,978
Int. Cl.⁴ F16H *29/08*
U.S. Cl. 74—119 **9 Claims**



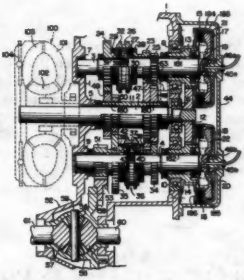
1. A power transmission apparatus comprising:
lever support means;
lever means having first and second end portions;
fulcrum means for pivoting said lever means to said lever support means at a fixed pivot location intermediate the first and second end portions of said lever means;
drive rod means adapted to be driven in reciprocation, said drive rod means having one end portion slidably and pivotally coupled to the first end portion of said lever means for sliding and pivoting relative to said lever means as said drive rod means reciprocates;
drive rod guide means for guiding the motion of said drive rod means so as to impart oscillating movement to said lever means as said drive rod means reciprocates;
output rod means having one end portion slidably and pivotally coupled to the second end portion of said lever means;
drive adjustment means for selectively shifting said lever support means to vary the distance from the pivot location to said one end portion of said drive rod means relative to the distance from the pivot location to said one end portion of said output rod means;
output rod guide means for guiding the movement of said output rod means so as to reciprocate in response to oscillating movement of said lever means whenever there is a non-zero distance from said pivot location to said one end portion of said output rod means; and whereby
shifting of said lever support means varies the distance through which said output rod means reciprocates in response to reciprocation of said drive rod means;
said lever means including first and second spaced apart lever portions, said lever portions each having first and second side walls with the second side walls being positioned adjacent to one another, said lever portions each having a longitudinally extending, outwardly opening, slot;
means for supporting said drive rod means to position said one end portion thereof between said lever portions;
means for supporting said output rod means to position said one end portion thereof between said lever portions; said one end portion of said drive rod means including first coupling means slidably positioned within the slots of said lever portions and pivoted relative to said lever portions to slidably and pivotally couple said one end portion of said drive shaft means to said lever portions; and
said one end portion of said output rod means including second coupling means slidably positioned within the slots of said lever portions and pivoted relative to said lever portions to slidably and pivotally couple said one end portion of said output rod means to said lever portions.

4,565,106

GEAR TRANSMISSION MECHANISM WITH MULTIPLE LAYSHAFTS

Masaharu Sumiyoshi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin-Warner Limited, Anjo, both of, Japan

Filed Aug. 20, 1982, Ser. No. 409,831
Claims priority, application Japan, Dec. 1, 1981, 56-193997
Int. Cl.⁴ F16H *3/08*
U.S. Cl. 74—359 **6 Claims**



1. A gear transmission for an automotive vehicle, comprising:
a first shaft which serves as a power input shaft;
a second shaft arranged so as to be spaced sidewards from and in parallel with said first shaft;
a third shaft arranged so as to be spaced sidewards from and in parallel with said first and second shafts;
a fourth shaft in tubular form arranged over said first shaft to be coaxial therewith;
a first subtransmission system which comprises a plurality of first gears and a first clutch and which selectively transmits rotational power between said first and second shafts;
a second subtransmission system which comprises a plurality of second gears and a second clutch and which selectively transmits rotational power between said first and third shafts;
a third subtransmission system which comprises a plurality of third gears and a first synchronizer and which selectively transmits rotational power between said second and fourth shafts;
a fourth subtransmission system which comprises a plurality of fourth gears and a second synchronizer and which selectively transmits rotational power between said third and fourth shafts;

a power output member which rotates about an axis arranged as spaced sidewards from and in parallel with said first and fourth shafts; and

a gear train which transmits rotational power between said fourth shaft and said power output member.

4,565,107

BALL THROUGH-PASSAGE FOR THE GEARSHIFTING LEVER OF A MOTOR VEHICLE

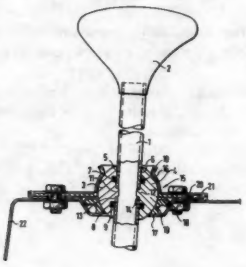
Robert Müller, Weissach Konstrukteur, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Feb. 2, 1984, Ser. No. 576,401

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305422

Int. Cl.⁴ G05G *9/12*; F16C *11/08*

U.S. Cl. 74—473 P **10 Claims**



1. A ball through-passage for a gearshifting lever of a motor vehicle, comprising a spherically shaped fixed bearing housing, two ball halves split along a cylindrical gearshifting lever and abutting at the gearshifting lever by way of cylindrical recesses, the ball-shaped surfaces of said ball halves abutting at the spherically shaped fixed bearing housing, two O-rings inserted between the ball halves and the gearshifting lever which are retained in annular grooves, and form-locking detent means for securing the two ball halves against axial displacement on the gearshifting lever.

4,565,108

GEARSHIFT APPARATUS FOR AN AUTOMOBILE

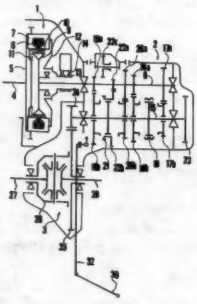
Fujio Makita, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 524,947

Claims priority, application Japan, Sep. 1, 1982, 57-153042

Int. Cl.⁴ B60K *20/00*

U.S. Cl. 74—475 **7 Claims**



1. A gearshift apparatus for an automobile with an electromagnetic clutch and a transmission operatively connected to the clutch and having four forward-gear trains and an output shaft, comprising:

a first synchronizing means for selectively engaging a second speed gear train and a fourth speed gear train, respectively, with the output shaft of said transmission, said second speed gear train having a gear ratio producing a sufficient torque to start said automobile on an ordinary road;

a second synchronizing means for selectively engaging a first speed gear train and a third speed gear train, respectively, with said output shaft, the first speed gear having a gear ratio producing a sufficient torque to start the automobile on an uphill and at heavy road, respectively,

means comprising a shift lever for operating said first synchronizing means and said second synchronizing means, respectively;

said shaft lever being mounted so as to be rotated to a first plane for operating said first synchronizing means and rotated to a second plane for operating said second synchronizing means;

means for holding said shift lever in said first and second planes, respectively, for enabling operating said first synchronizing means and for enabling operating said second synchronizing means, respectively by said shift lever and;

a gear select means including a select lever selectively operatively engagable with one of said synchronizing means by rotation of said shift lever to respective of said planes, and an actuating rod operatively connecting said shift lever with said select lever for operating one of said first and second synchronizing devices respectively by movement of said shift lever.

4,565,109

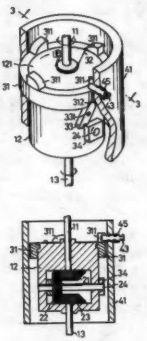
INSTANTANEOUS DIRECTION CHANGING ROTATION MECHANISM

Chi-Chour Tsay, No. 31, Sung Shu, Jen-Shan Li, Ta-Hsi Chen, Tao-Yuan Hsien, Taiwan

Filed Dec. 27, 1983, Ser. No. 565,713

Int. Cl.⁴ F16H *5/06, 5/76*

U.S. Cl. 74—780 **6 Claims**



1. A direction changing rotation mechanism comprising:

a rotation means comprising a driving shaft and a driven shaft with coincident central lines and a casing of gear between the driving shaft and driven shaft for transmission of power from the driving shaft via the casing of gear to drive the driven shaft for rotation in the same direction;

a direction changing train of gear within the casing of gear with negative train value for transmission of power from the driving shaft to drive the driven shaft for rotation in reverse direction;

a clutch means comprising a movable ring attached to the circumference of the casing of gear which can generate angular displacement against the casing of gear, a return spring for the movable ring, a brake block extended from the train of gear to the circumference of the casing of gear and a brake element on the casing of gear to control the brake block in order to control the driving shaft to transmit via either the casing of gear or the train of gear; and a sensor means comprising a sensor element and a stop element fixed to an external shell which, by reaction of the sensor element contacting another object, a force is applied to the stop element for displacement in order to control the rotation of the movable ring and then to alter the engagement condition between the brake block and brake element of the clutch means for controling the direction of rotation of the driven shaft indirectly.

4,565,110

HYDRAULIC APPARATUS FOR A CONTINUOUSLY VARIABLE TRANSMISSION

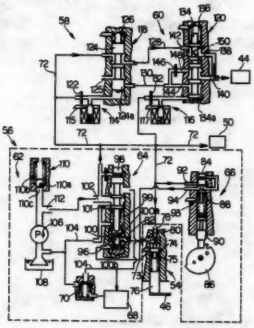
Hiroshi Ito, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 17, 1984, Ser. No. 581,051

Claims priority, application Japan, Feb. 26, 1983, 58-031298

Int. Cl.⁴ B60K *41/16*

U.S. Cl. 74—868 **22 Claims**



12. A hydraulic apparatus for a continuously variable transmission for motor vehicles having a driving pulley with a fixed member and a movable member, the movable member being actuated by a hydraulic cylinder to form a V-shaped opening therebetween, a driven pulley with another fixed member and another movable member, said another movable member being similarly actuated by another hydraulic cylinder to form another V-shaped opening therebetween, and a belt member spanning said pulleys, comprising:

a hydraulic fluid reservoir containing hydraulic fluid;

a hydraulic fluid pump for pumping the hydraulic fluid from the reservoir;

ratio selecting valve means for changing the speed ratio between the driving pulley and the driven pulley; and

change speed control valve means for controlling the speed of changing speed ratios between the driving pulley and the driven pulley, the change speed control means comprising;

a valve having a first and a second land;

a first inlet passage supplied with the hydraulic fluid from the hydraulic fluid pump;

a second inlet passage supplied with the hydraulic fluid from the hydraulic fluid pump, the hydraulic fluid being exerted on the second land;

a controlling means connected with the second inlet passage, the controlling means supplying the hydraulic fluid to the second land or draining the hydraulic fluid in the second inlet passage;

an outlet passage connected with the cylinder of the driving pulley, the outlet passage draining the fluid of the cylinder of the driving pulley therethrough when the hydraulic fluid is not supplied to the second land, or being disconnected with the first inlet passage when the hydraulic fluid is not supplied to the second land; and

a first biasing means for biasing the first land in the direction to communicate the first inlet passage with the outlet passage.

4,565,111

DEVICE FOR ROTATING AND AXIALLY MOVING A BOLT

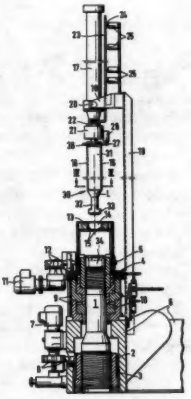
Karl-Heinz Ecker, Erkelenz, and Erhard Hoffmann, Hückelhoven, both of Fed. Rep. of Germany, assignors to Wirth Maschinen-und Bohrgerate-Fabrick GmbH, Erkelenz, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,639

Claims priority, application Fed. Rep. of Germany, May 25, 1983, 3318941

Int. Cl.⁴ B25B *13/50*

U.S. Cl. 81—53.2 **18 Claims**



1. In a device for rotating and axially moving a heavy screw bolt of the type which cannot be actuated manually wherein an axially displaceable coupling device is engageable with an accessible end part of the bolt, the improvement comprising:

a coupling device receiving chamber in the accessible end part of the bolt;

a shaft part on the coupling device having a longitudinal axis aligned with said chamber;

a head adjacent the end of said shaft insertable into said chamber;

at least one projection on said head projecting transversely to said longitudinal axis;

at least one axial abutment in said chamber operatively engageable axially with said head;

at least one first tangential abutment in said chamber extending over substantially the entire length of the chamber; and

at least one second tangential abutment extending over only part of the length of said chamber in the region through which said head enters said chamber;

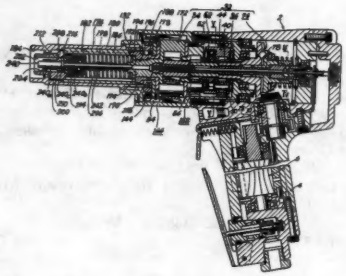
said tangential abutments being engageable with said projection and being spaced with respect to each other to allow said projection of said head to be introduced between said abutments.

4,565,112

BOLT TIGHTENING APPARATUS HAVING BOLT TIP DISCHARGING DEVICE

Masahiro Fujita, Sennan, and Yukio Uemura, Yokohama, both of Japan, assignors to Maeda Metal Industries, Ltd., Osaka and Nissan Motor Co., Ltd., Kanagawa, both of, Japan

Filed Jun. 25, 1984, Ser. No. 624,177
Claims priority, application Japan, Jun. 25, 1983, 58-98297[U]
Int. Cl.[4] B25B *17/00*
U.S. Cl. 81—56 **3 Claims**



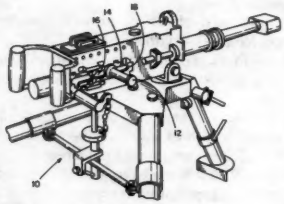
1. A bolt tightening apparatus comprising an epicyclic train including an internal gear and a planet gear support frame, an outer socket coupled to the internal gear, an inner socket coupled to the support frame, the two sockets being adapted to have fitted therein a nut and a tip at the front end of a bolt to shear the bolt tip by the reaction of rotation acting on the two sockets, and an ejector pin disposed in the inner socket for knocking out the bolt tip remaining in the inner socket, the outer socket and the inner socket being removably in engagement with the epicyclic train, the ejector pin having a rear end projecting from the rear end of the inner socket and extending into the support frame when in a retracted position, the epicyclic train being formed with a stepped axial bore extending therethrough in alignment with the ejector pin, a clamp shaft being axially slidably disposed in the axial bore and having a pin bore coaxial therewith and a clamp portion, the clamp portion being engageable with the stepped portion of the epicyclic train defining the axial bore to clamp the ejector pin when the ejector pin is inserted into the pin bore, the clamp shaft being coupled to a lever for retracting the clamp shaft to release the ejector pin from the clamp portion.

4,565,113

AUTOMATIC WEAPON CHARGING HANDLE AND BOLT LATCH

Ernst Bunning, Durham, N.H., assignor to Maremont Corporation, Carol Stream, Ill.

Filed Mar. 26, 1984, Ser. No. 593,481
Int. Cl.[4] F41D *11/00*; F41F *19/16*
U.S. Cl. 89—1.4 **6 Claims**



1. An automatic weapon comprising:

a bolt receiver including a charging handle slot and a first latch member;

a bolt mechanism received by the bolt receiver; and

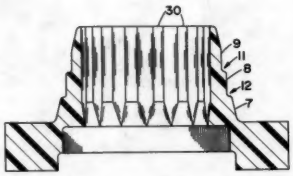
a combination charging handle and bolt latch (hereinafter "the charging handle") having a spindle attached to the bolt mechanism through the charging handle slot, a grip including a second latch member, the grip being on the spindle, and bias means for biasing the grip normally away from the bolt receiver, the handle being latchable by movement of the grip toward the bolt receiver against the bias of the bias means, to place the latch members in a bolt latching condition, and the handle being unlatchable by slight movement of the grip which releases the latch members from each other and permits the bias means to swiftly return the grip away from the bolt receiver and in which the length of the weapon defines a longitudinal direction along the length and transverse directions perpendicular to the longitudinal direction, the charging handle slot extending longitudinally, the spindle and grip extending transversely, and the first latch member on the bolt receiver being longitudinally forward of the second latch member in the bolt latching condition, the handle being unlatchable by slight longitudinally rearward movement of the grip.

4,565,114

CARTRIDGE STRIP MAGAZINE FOR POWDER-ACTUATED TOOLS

Bruce E. Burdick, Godfrey, Ill.; John A. Rodden, Florissant, Mo.; Robert G. Brown, Wood River, and Rodney N. Barnard, Jerseyville, both of Ill., assignors to Olin Corporation, Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,923
Int. Cl.[4] F42D *39/08*
U.S. Cl. 89—35.01 **3 Claims**



1. A plastic cartridge magazine particularly for the use with an explosive charge driven setting tool having a cartridge chamber wall defining a conical cartridge chamber at the barrel breech of the tool, said magazine comprising a plastic magazine band having at least one opening therethrough for receiving the base of a cartridge, an externally stepped tubular projection on one side of said band extending around the opening and defining with the opening a cartridge receiving chamber extending through the band to the opposite side thereof, and defining both a plurality of spaced plastic sealing rings for sealing contact with said chamber and a shock absorption cavity between said plurality of rings.

4,565,115

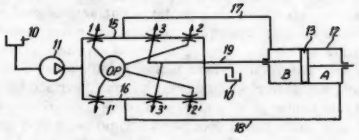
HYDRAULIC DISTRIBUTOR FOR ASSISTANCE POWER MOTOR WITH RETURN TO REST POSITION

Juan S. Bacardit, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Aug. 2, 1982, Ser. No. 404,118
Claims priority, application Spain, Aug. 4, 1981, 505159
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—375 A **9 Claims**

1. A combination hydraulic distributor and double-action hydraulic assistance motor, the hydraulic distributor comprising a primary member connected to an input control device

and displaceable in relation to a second member connected to an output device operatively coupled to the double action hydraulic assistance motor having a piston, said primary and secondary members defining mutually two parallel pressure fluid flow circuits between a source of pressure and a reservoir, working conduits each leading to an associated chamber of said hydraulic assistance motor and being connected to an intermediate portion of a respective parallel pressure fluid flow circuit between first and second modulable valve means serially arranged in each said parallel pressure fluid flow circuit, the first and second valve means actuated by movement of said primary member relative to said secondary member from a rest position of the members so as to connect alternatively the working conduits to one of said source of pressure and said reservoir, characterized in that the hydraulic distributor includes modulable return valve means in each said parallel



pressure fluid flow circuit and disposed between the connection of said working conduit and said second valve means, the return valve means each mechanically coupled to said piston of said hydraulic assistance motor and actuated responsive to actuation of said hydraulic assistance motor from a rest position which actuation effects displacement of the piston of said hydraulic assistance motor, to create a restriction in an associated return circuit portion, toward said reservoir, of the chamber in relief condition of said hydraulic assistance motor, there being provided a pressure increase in said chamber in relief condition to enable effective return movement of the piston toward its rest position when the primary member is returned to its respective rest position and said hydraulic assistance motor is in a configuration different from its rest position, and each said return valve means being defined by a common slide valve member and including a pair of axially spaced annular openings cooperating with said slide valve member.

4,565,116

HYDRAULIC SPEED CONTROLS FOR DIE CLOSING UNIT OF INJECTION MOLDING MACHINE

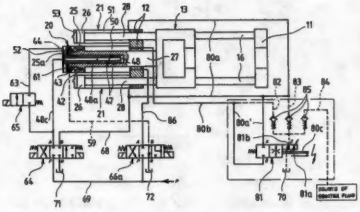
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Oct. 14, 1983, Ser. No. 541,797

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1982, 3238111

Int. Cl.⁴ F15B *13/06*

U.S. Cl. 91—519 **12 Claims**



1. A hydraulic actuator assembly adapted for use in a die closing unit of an injection molding machine as a rapid-travel drive for die opening and closing movements and as a source of elevated die closing pressure, which die closing unit includes a stationary cylinder head plate and a movable die carrier member guided for die opening and closing movements along the center axis of the die closing unit, whereby, in the die closing travel, said member moves away from the cylinder head plate in an axially forward direction; the hydraulic actuator assembly comprising in combination:

a power cylinder extending rearwardly from the cylinder head plate, in alignment with the center axis of the die closing unit, the bore of the power cylinder being axially delimited by the cylinder head plate and a rear cylinder cover and enclosing a power piston seated on a piston rod which extends sealingly through the cylinder head plate and is connected to the movable die carrier member, the power piston dividing the interior space of the power cylinder into a high-pressure space on the rear side of the piston and a cross-sectionally smaller low-pressure space on the forward side of the piston;

a closable power piston bypass in the form of at least one bypass channel in the power piston connecting said high-pressure and low-pressure spaces, and hydraulically operated valve means for opening and closing the power piston bypass, so that, when the piston moves rearwardly in a die opening movement and the bypass is open, a volume of fluid corresponding to the difference between the effective areas of two pressure spaces is displaced out of the power cylinder;

hydraulic cylinder means for imparting to the movable die carrier member a forwardly directed force producing a closing travel;

means for supplying pressurized fluid to the high-pressure space of the power piston, when the power piston bypass is closed, so as to create an elevated die closing pressure against the movable die carrier member in the closed position of the die closing unit;

at least one opening travel cylinder in parallel alignment with the power cylinder, the opening travel cylinder having a cylinder bore and a matching travel piston seated on a piston rod which is connected to the piston rod of the power cylinder to move in unison with the latter, the travel piston dividing the interior space of the opening travel cylinder into a pressureless space on the rear side of the piston and an opening travel pressure space on its forward side, and the total effective area of opening travel pressure space being larger than said difference between the effective areas of the power cylinder pressure spaces by a net opening travel area; and

a flow connection between the low-pressure space of the power cylinder and the pressure space of the opening travel cylinder, or cylinders, respectively, so arranged that, when the pistons move rearwardly in a die opening movement, with the power piston bypass open, fluid corresponding to said difference in power cylinder pressure spaces passes from the latter into the opening travel pressure space, and an opening travel is obtained, when pressurized fluid corresponding to said net opening travel area is supplied to said connected pressure spaces and, conversely, a die closing movement causes a volume of fluid to pass from the opening travel pressure space into the low-pressure space of the power cylinder and a volume of fluid corresponding to said net opening travel area to exit from said connected pressure spaces into a fluid return line; and wherein

the net opening travel area by which the effective area of the opening travel pressure space exceeds the difference between the effective areas of said power cylinder pressure spaces is a fraction of said difference, and the volume of pressurized fluid which is required to produce an opening travel of the movable die carrier member is, correspondingly, a fraction of the volume of fluid which simultaneously passes through said flow connection between the low-pressure space of the power cylinder and the opening travel pressure space; and

said flow connection includes a continuously adjustable throttle valve adapted to control the speed of opening

travel and closing travel by determining the flow rate at which it allows fluid to pass through said flow connection.

4,565,117

AXIAL PISTON MOTORS HAVING A FRICTION BRAKE

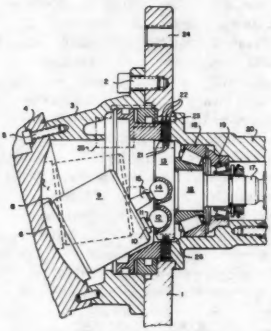
Franz Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 279,948

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028774

Int. Cl.[4] F15B *15/26*

U.S. Cl. 92—20 **7 Claims**



1. In an axial piston motor having a cylindrical drum carrying at least one cylinder passage parallel to the axis of the drum, a reciprocable piston in each cylinder passage, connecting rod means on one end of each said piston, a driving flange on a drive shaft enclosed within a motor housing surrounding said drum, said flange being operatively connected to said drum by way of the connecting rod means whereby rotation of the driving flange corresponds with the reciprocation of the at least one piston, the improvement comprising brake means between the housing and driving flange acting on the periphery of the driving flange.

4,565,118

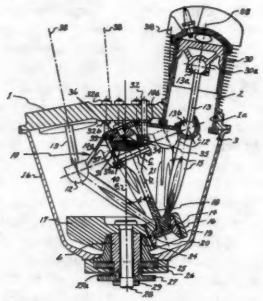
AXIAL CYLINDER MACHINE

Georges H. Girodin, Houilles, France, assignor to S.A. Heuliez DEA, Cerizay, France

Filed Apr. 6, 1984, Ser. No. 597,542

Int. Cl.[4] F01B *3/00*

U.S. Cl. 92—68 **7 Claims**



1. An axial cylinder machine having, in combination, a housing, a shaft journaled in one end of said housing to turn about an axis extending longitudinally of the housing, a plurality of cylinders mounted on the other end of said housing and equally spaced angularly about said axis, a plurality of pistons, one for each of said cylinders and each sliding in the associated cylinder, a plurality of rods, one connected to each of said pistons and each projecting into said housing, a spider member disposed in said housing and having a centerline inclined to said axis and intersecting the axis at a center point, a plurality of swivel connections, one for each of said rods and each connecting the associated rod to said member, said swivel connections being radially spaced from said centerline and equally spaced angularly around the centerline, a main swivel connection supporting said member in said housing to swivel about said center point, a crank fast on said shaft and projecting radially outwardly from the axis, a post rigid with said member and extending along said centerline toward said crank, and a bearing rotatably supporting an end portion of said post in said crank whereby said end portion revolves about said axis as said member swivels about said center point and as said pistons reciprocate in said cylinders, said main swivel connection comprising a first part rigidly mounted on said housing and having a first swivel surface facing axially away from said shaft, said first swivel surface being a conical surface having its apex at said center point and its axis being coincident with the axis of said shaft, and a second part rigid with said member having a second swivel surface, said second swivel surface being a conical surface having its apex at said center point and its axis being coincident with said centerline, said conical surfaces engaging each other along radially extending lines such that said second swivel surface opposes said first swivel surface and engages the latter to swivel on the first swivel surface as said end portion of said post revolves about said axis.

4,565,119

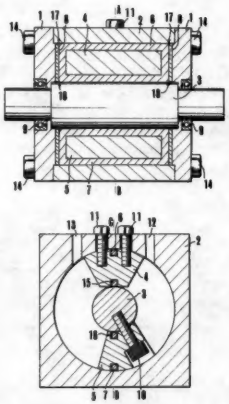
VANE-TYPE ROTARY ACTUATOR

Yasuo Higuchi, Aichi, Japan, assignor to Kabushiki Kaisha Japanlicensor, Japan

Continuation of Ser. No. 389,928, Jun. 18, 1982, abandoned. This application Jun. 20, 1984, Ser. No. 622,659

Int. Cl.[4] F01C *9/00*

U.S. Cl. 92—125 **2 Claims**



1. A vane-type rotary actuator comprising:

a cylindrical housing defining a cylindrical space having an axial direction and a radial direction, said housing defining an axially extending cylindrical metal wall extending around said cylindrical space and a pair of spaced apart radially extending radial metal walls on opposite ends of said cylindrical space;

a shaft having an outer axially extending metal shaft surface, said shaft rotatably mounted to said cylindrical housing

extending through a center of said cylindrical space, said cylindrical metal wall and said outer metal shaft surface defining an annular vane space therebetween, said pair of radial metal walls extending between said cylindrical metal wall and said metal outer shaft surface and bounding opposite ends of said annular vane space;

a pair of radially extending seal plates each engaged over a respective one of said radial metal walls, each seal plate being made of elastic material and being radially elastically compressed in position by said cylindrical metal wall, each seal plate having an outer cylindrical surface compressedly engaged against said cylindrical metal wall and an inner cylindrical surface defining a hole through said seal plate and compressedly engaged against said outer metal shaft surface, said seal plates having radial planar walls facing said cylindrical space and against which said fixed packing and said slidable packing bear, said seal plates being each made of a material chose from the group consisting of nylon, UHMW polyethylene, poly-urethane rubber, a complex of poly-urethane rubber and fluoro-resin, and a complex of metal and synthetic rubber;

a fixed vane connected to said fixed cylindrical housing an extending into said vane space;

a fixed packing connected to said fixed vane having an axially extending portion engaged against said outer metal shaft surface and a pair of radially extending portions connected to said axially extending portion each bearing against one of said seal plates;

a movable vane connected to said shaft and extending into said vane space;

a slidable packing connected to said movable vane having an axially extending portion bearing against said cylindrical metal wall and a pair of radially extending portions connected to said axially extending portion and each bearing against one of said seal plates;

said fixed packing including a second axially extending portion bearing against said cylindrical metal wall and connected to said pair of radially extending portions of said fixed packing to form a closed packing around said fixed vane, said slidable packing including a second axially extending portion bearing against said outer metal shaft surface and connected to said pair of radially extending portions of said slidable packing to form a closed packing around said movable vane.

4,565,120

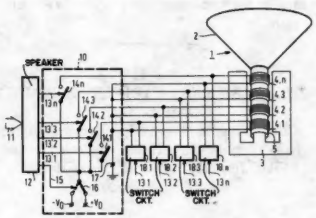
SAFETY RESTRAINT FOR BRAKE ACTUATORS

Kevin J. Gray, and Bruce D. Sibley, both of Lawrence, Kans., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Mar. 20, 1985, Ser. No. 713,884

Int. Cl.[4] F01B 7/00

U.S. Cl. 92—130 R **9 Claims**



1. A safety restraint for a fluid operated brake actuator having a housing including first and second portions interconnected at outwardly extending flanges defined on each portion, clamping means engaging the flanges and drawing the flanges toward each other, and a compression spring within the housing exerting a biasing force in an axial direction tending to separate the housing portions, the improvement comprising, at least one of the housing portion flanges having an undercut portion extending away from the other housing portion and in the direction of the spring axial force, at least two safety restraint members mounted upon one of the housing portions substantially equally circumferentially spaced thereon and each having a notch defined therein by opposed, spaced, first and second surfaces, the spacing between said surfaces being greater than the spacing between the flanges when fully clamped by the clamping means, said restraint members' notches being inserted over the clamped flanges wherein said first and second surfaces are each in alignment with a flange in the spring force axial direction, said first surface being engagable by said undercut portion of the one flange and of a complementary configuration whereby during release of the clamping means forces exerted on said first surface by said undercut portion in said axial direction force said restraint members inwardly to maintain alignment of said notch second surface with its aligned flange.

4,565,121

APPARATUS FOR USE IN PREPARING INFUSIONS

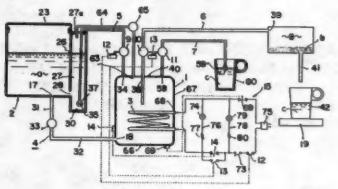
Yoshio Ohya; Junichi Sano, both of Kamo, and Koichi Tamaki, Niigata, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Niigata, Japan

Filed Nov. 26, 1984, Ser. No. 674,753

Claims priority, application Japan, Nov. 29, 1983, 58-224778; Dec. 29, 1983, 58-248186[U]; Jan. 9, 1984, 59-1212[U]; Feb. 17, 1984, 59-22218[U]; Jun. 20, 1984, 59-92787[U]; Jun. 20, 1984, 59-92788[U]; Oct. 12, 1984, 59-214645

Int. Cl.[4] H47J 31/00

U.S. Cl. 99—281 **10 Claims**



1. An apparatus for use in preparing infusions, said apparatus comprising

a water tank,

a sealed container having a top,

a heating means including a heating element inside said sealed container,

a first conduit means connecting said sealed container and said water tank,

an infuser means having an inlet and an outlet,

a second conduit means connecting said container and said inlet,

a third conduit means for conveying steam from said container through said top,

a first valve means for controlling the movement of liquid through said second conduit means,

a second valve means for controlling the movement of liquid through said third conduit means,

a first control switch connected in series with said heating element, said first control switch being adapted to operate said first and second valves,

an air vent valve for controlling the removal of steam from said container through a fourth conduit means,

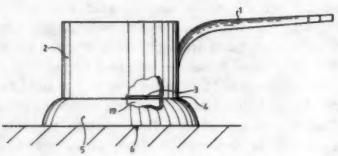
a second control switch connected in series with said first control switch and with said air vent valve, and

a thermostat adapted to control the temperature inside said container, said thermostat being connected in parallel with said second conotrol switch.

4,565,122
COOKING UTENSIL HAVING CHAMBER BENEATH PERFORATED COOKING SURFACE

Jean P. Feuillalay, Anneville Ambourville Duclair (Seine Maritime), France

Filed Dec. 9, 1983, Ser. No. 559,960
Int. Cl.[4] A47J *37/00, 29/06*
U.S. Cl. 99—447 **1 Claim**

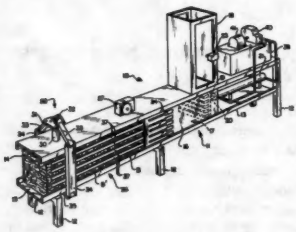


1. A cooking utensil comprising
(i) a plate having a substantially flat cooking surface
(ii) means forming a wall surrounding the cooking surface and extending upwardly therefrom,
(iii) means forming a collar extending downwardly from the periphery of the cooking surface, the collar forming a chamber beneath the cooking surface for enabling positive pressure to be established in the chamber by the confinement of hot gases,
(iv) the cooking surface having many small holes therethrough which open into the chamber beneath the cooking surface and which cooperate with the collar to form a chimney, the small holes being distributed over the area of the cooking surface, and the diameters of those holes being in the 1.5 to 3 mm range.

4,565,123
TENSION CONTROL FOR BALING MACHINE

Gerald W. Sanders, 650 Beckley Ave., Marion, Ohio 43302

Filed May 10, 1984, Ser. No. 609,029
Int. Cl.[4] B30B *15/26*
U.S. Cl. 100—43 **10 Claims**

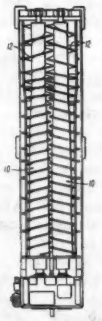


1. In combination with a baling machine having a baling chamber with a discharge outlet, a throat portion adjacent to the discharge outlet of the baling chamber into which compacted bales are forced, a reciprocal baling head movable within the baling chamber to compact material charged into the chamber against the rear surface of a previously compacted bale, a first fluid cylinder for reciprocating the baling head, tension means associated with the throat portion of the baling machine adapted to hold the previously compacted bale in position in the discharge outlet of the baling chamber until a predetermined force is applied to the bale, the tension means being operated by a second fluid cylinder connected to the throat portion, there being a supply of pressurized fluid connected to the first and second cylinders, and first valve means between the fluid supply and the first cylinder to control the reciproation of the baling head, the improvement comprising:
a pressure switch connected to the fluid supply, the switch being operable to actuate when the pressure of the fluid supply to the first valve means exceeds a predetermined level;
a second valve between the second fluid cylinder and the fluid supply, the second valve being operatively connected to the pressure switch to actuate when the pressure of fluid supply exceeds a predetermined level to retract the tension means, until the pressure of the fluid supply returns below the predetermined level; and
a pressure reducing valve between the fluid supply and the second valve so that reduced intermediate supply fluid is supplied to the second fluid cylinder through the second valve.

4,565,124
SCREW PRESSES

Thomas Stautland, Loddefjord, and Steinar F. Jacobsen, Knarrevik, both of Norway, assignors to Stord Bartz A/S, Bergen, Norway

Filed Nov. 2, 1983, Ser. No. 548,080
Claims priority, application Norway, Nov. 10, 1982, 823739
Int. Cl.[4] B30B *9/16*
U.S. Cl. 100—117 **10 Claims**



1. Screw press for dehydrating fluid-containing materials which comprises housing means having a sieve surface, a pair of horizontally disposed screw means mounted in side-by-side relation for rotation within said housing means, each said screw means comprising a rigid main stem portion disposed radially inwards of a rigid sieve-forming surface portion and reinforcing ribs disposed between said stem and surface portions, each said screw means having screw threads secured directly to said surface portion, said stem portion and said surface portion defining therebetween a space forming drainage duct means for draining fluid from said seive-forming surface portion.

4,565,125
RAM AND FRAMELESS CABINET ASSEMBLY FOR COMPACTOR

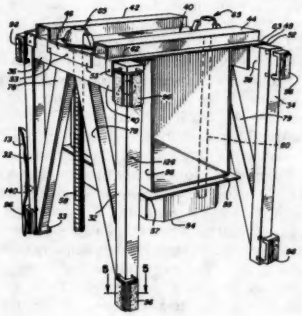
Aman U. Khan, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 14, 1984, Ser. No. 620,760
Int. Cl.[4] B30B *15/04*
U.S. Cl. 100—214 **20 Claims**

1. In a refuse compacting apparatus having an exposed sheet metal wall having an inside surface, an inner refuse receptacle, a vertically reciprocable ram assembly having a plurality of vertically extending legs, and means for forcibly driving the ram assembly along a preselected path to effect refuse compaction in the receptacle, the improvement comprising:
a plurality of pressure equalizing pads, each said equalizing pad having a substantially flat surface; and

mounting means for floatingly mounting said pressure equalizing pads to said vertically extending legs,

said mounting means allowing repositioning of the equalizing pads relative to the legs so that the flat surface of each of a plurality of the pressure equalizing pads facially engages said inside surface of the exposed sheet metal wall in



the event that the ram assembly deviates from said preselected path during a compaction operation,

said pressure equalizing pads being arranged to cause transverse forces produced by the ram to be distributed over said inside surface suitably so that said inside surface can serve as the sole guide means for the ram assembly without damage to the sheet metal wall.

4,565,126

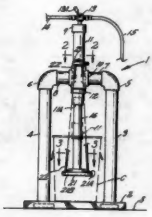
TRASH COMPACTOR

William D. McBee, 2100 Hayden Bridge Rd., Springfield, Oreg. 97477

Filed Feb. 22, 1984, Ser. No. 582,285

Int. Cl.[4] B30B *15/04*

U.S. Cl. 100—214 **4 Claims**



1. A free-standing compactor for compacting trash deposited in an upright open waste receptacle, said compactor comprising,

a base for placement on a ground surface and on which the receptacle may be placed,

a support structure in place on said base, and

a cylinder assembly carried by said support structure and including a pressure responsive cylinder having a piston having a compaction member at its external extremity, cylinder mounting means in place on the support structure, valve means for communication with a source of fluid pressure and with the cylinder interior, said valve means including a cylinder exhaust position for venting fluid from the cylinder, elongate elastomeric members located exteriorly of said cylinder and piston and acting on said piston to raise same to a static position in the absence of cylinder pressure, clamping means detachably securing said elongate elastomeric members in place on said cylinder and additionally serving to hold the cylinder in an elevated operable position.

4,565,127

MECHANISM FOR RECIPROCATING A LINE PRINTER SHUTTLE

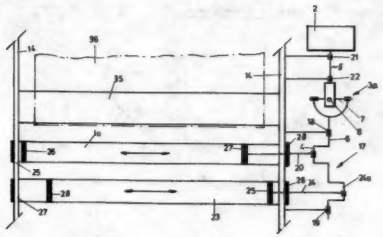
Josef Pichler, Ebreichsdorf; Karl Puchegger, Föhrenau, and Bruno Starek, Vienna, all of Austria, assignors to Mannesmann Tally GmbH, Vienna, Austria

Filed Jul. 18, 1983, Ser. No. 514,948

Claims priority, application European Pat. Off., Jul. 8, 1983, 82 106117.3

Int. Cl.[4] B41J *3/00*

U.S. Cl. 101—93.04 **11 Claims**



1. Apparatus for reciprocating a line printer shuttle along a linear path comprising:

a rotational drive operating at a constant speed and having an output shaft rotating accordingly at a constant angular speed;

a transmission having an input with an input axis and being coupled to the output shaft and providing a rotational output about an output axis arranged obliquely to the input axis, the transmission modifying the constant rotational speed to cyclically vary the speed of the rotational output; and

linkage means including a crank connected to the rotational output of the transmission for translating the motion of the rotational output of the transmission into a linear reciprocating motion, said modification of the rotational output of the transmission being such that the reciprocating motion has at least one constant speed section in between respective two sequential reversals.

4,565,128

ROTARY WHEEL PRINTER

Naoki Moriyama, Tamayama; Hiroshi Koike, and Osamu Hatakeyama, both of Morioka, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jul. 2, 1984, Ser. No. 626,734

Claims priority, application Japan, Jun. 30, 1983, 58-100072[U]; Jun. 30, 1983, 58-100073[U]; Jul. 1, 1983, 58-101039[U]; Jul. 2, 1983, 58-102059[U]

Int. Cl.[4] B41J *1/22*

U.S. Cl. 101—93.19 **1 Claim**

1. A rotary wheel printer comprising:

(a) a rotatable platen adapted to receive a paper sheet wound partially therearound;

(b) a carriage movable along said platen;

(c) a type wheel mounted on said carriage in confronting relation to said platen and having a plurality of type fonts, said type wheel being inclined with respect to the horizontal plane;

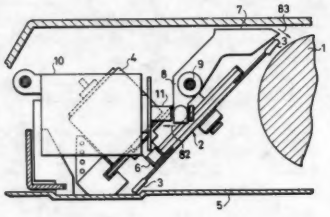
(d) first drive means mounted on said carriage and inclined with respect to the horizontal plane for driving said type wheel to rotate about its own axis to bring a selected font into a printing position;

(e) hammer means mounted on said carriage for pressing the

type font held in said printing position one at a time against said platen;

(f) second drive means including a solenoid mounted on said carriage for driving said hammer means, said hammer means having a hammer lever interconnecting said hammer means and said solenoid and including an engagement portion at one end thereof, said solenoid having a drive shaft including a smaller-diameter neck portion sandwiched by said engagement portion;

(g) a ribbon cassette mounted on said carriage and accomodating an ink ribbon, said ribbon cassette having means including forward arm portions having slanted surfaces inclined at the same angle as said type wheel for extending the ribbon thereacross;



(h) ribbon feeder means for successively feeding said ink ribbon accomodated in said ribbon cassette in one direction; and

(i) third drive means mounted on said carriage for driving said ribbon feeder means,

wherein said engagement portion comprises a pair of annular portions confronting each other with a clearance gap defined therebetween and having free ends, respectively, said smaller-diameter neck portion of said drive shaft being inserted in said clearance gap and sandwiched between said annular portions, said annular portions having other peripheral surfaces resiliently held against end surfaces of said smaller-diameter neck portion.

4,565,129

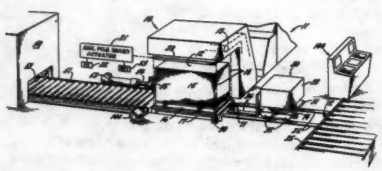
DEVICE FOR THE AUTOMATIC PILE CHANGE AT THE DELIVERY OF A PRINTING

Claus Simeth, Muhlheim, and Janko Despot, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Fed. Rep. of Germany

Continuation of Ser. No. 954,581, Oct. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 889,651, Mar. 24, 1978, abandoned. This application Sep. 30, 1980, Ser. No. 192,246

Int. Cl.[4] B41F *13/64*; B65H *29/04*

U.S. Cl. 101—240 **1 Claim**



1. In a printing press delivery mechanism the combination comprising a first conveyor for delivering sheets from a press for discharge seriatim onto a pile in a piling space, a pile board in the form of a skid in the piling space for accumulating the pile, a second horizontally extending conveyor at substantially floor level a short distance from the piling space for receiving the skid when it is full, a horizontally extending track extending substantially at floor level between the piling space and the second conveyor and arranged substantially at right angles to the latter, a wheeled carriage on the track, a lift fork on the carriage, powered rotating means supporting the fork on the carriage for swinging movement through substantially 180 degrees from a loading position in which the fork faces the piling space and an unloading position in which the fork faces the second conveyor, powered lifting means for raising and lowering the fork with respect to the carriage, powered driving means for reciprocating the carriage along the track, programmed control means including limit switches for energizing the powered means in sequence for a cycle of skid removal in which the fork is (a) shifted from an initial position by the carriage into the pile space to engage the skid, (b) raised so the skid clears the floor, (c) rotated 180 degrees with the skid so that it points in the direction of the second conveyor, (d) shifted by the carriage to a position in which the skid is over the second conveyor, (e) lowered to lower the skid onto the second conveyor for transfer out of the delivery area, and (f) returned to the initial position, a skid magazine for empty skids, means including a third conveyor horizontally extending from the magazine to the piling space for feeding an empty skid from the magazine to the piling space substantially at floor level, means actuated incident to the arrival of the empty skid for locating the same in a sheet receivingposition in the piling space, means initiated by the control means for actuating the feeding means so that an empty skid is fed from the magazine into receiving position synchronized with the removal of the full skid therefrom, and means responsive to the filling up of the empty skid for triggering the control means for a successive cycle of skid removal.

4,565,130

APPARATUS FOR PRODUCING STACKS OF PRINTED PRODUCTS PROVIDED WITH A COVER SHEET

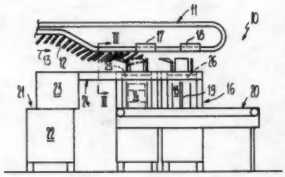
Willy Leu, Pfäffikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Nov. 19, 1984, Ser. No. 673,021

Claims priority, application Switzerland, Nov. 30, 1983, 6395/83

Int. Cl.[4] B41F *13/64*

U.S. Cl. 101—240 **10 Claims**



1. An apparatus for producing stacks of printed products provided with cover sheets, comprising:

delivery conveyor for supplying said printed products;

a stacker arranged in cooperating relationship with respect to said delivery conveyor and having at least two stacking wells individually supplied from above with the printed products;

deposition means for depositing one cover sheet on each stack produced;

a device for readying individual printed cover sheets;

said deposition means including a cover sheet conveyor arranged subsequent to said device for readying cover sheets;

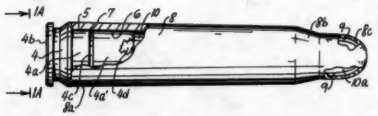
said cover sheet conveyor being provided with a controllable discharge outlet for each stacking well of said at least two stacking wells; and

each said controllable discharge outlet opening into a therewith associated one of said at least two stacking wells.

4,565,131
CARTRIDGE ASSEMBLY

Delmer B. Buchner, 16 Dubois Rd., Warren, N.J. 07060

Filed Sep. 17, 1984, Ser. No. 651,299
Int. Cl.[4] F42B 5/22, 5/30
U.S. Cl. 102—444 5 Claims

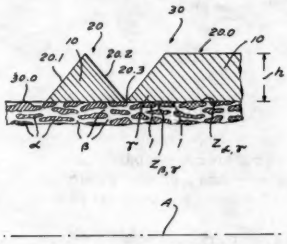


1. A cartridge article comprising in combination: a cartridge-base comprising polycarbonate in an amount in a range of about 65% by weight to about 90% by weight and polyethylene in an amount in a range of from about 15% by weight to about 30% by weight admixed and compressed as a unit, shaped as a cartridge-base, said unit including polytetrafluoroethylene in an amount ranging from about 1% to about 10% by weight admixed with said polycarbonate and said polyethylene and compressed therewith as a part of the cartridge-base.

4,565,132
FORM-LOCKING MEANS, MATERIAL FOR FORMING SAME AND PROCESS FOR ARRANGING THE FORM-LOCKING MEANS IN THE PERIPHERAL REGION OF A PROJECTILE MADE OUT OF THE HEAVY METAL SINTER ALLOY

Ulrich Theis, Mülheim, Fed. Rep. of Germany, assignor to Rheinmetall GmbH., Duesseldorf, Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,825
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030072
Int. Cl.[4] F42B 11/00, 13/16
U.S. Cl. 102—517 4 Claims



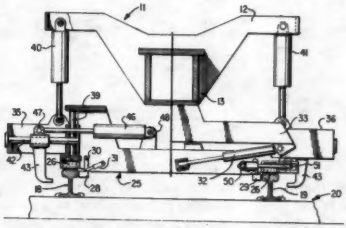
1. Form-locking means in a peripheral surface region 30 of a subcaliber projectile for form-locking the projectile to a sabot, said surface region consists of a material in the form of an n-phase sinter alloy, said alloy having a high density due to having a high content of at least one heavy metal, where $n \geqq 2$, said n-phase sinter alloy of said form-locking means forming in said peripheral surface region 30 of the projectile at least one further alloy phase including a predetermined amount of a light metal.

4,565,133
CLAMP ARRANGEMENT FOR TRACK LIFTING AND ALIGNING DEVICE

Roy J. Moore, Columbia, S.C., assignor to Canron Corp., West Columbia, S.C.

Filed May 9, 1983, Ser. No. 492,876
Int. Cl.[4] E01B 27/17
U.S. Cl. 104—7 B 9 Claims

1. A railroad track lifting and aligning device mounted for track travel on a longitudinally extending main frame of a track working machine and comprising a track aligning sub-frame extending transversely of said main frame; wheels on said sub-frame for engaging the rails of the track; rail contacting means on said sub-frame for engaging the inside of each of the rails of the track; vertically extending guide-rod means on said sub-frame; a track lifting rail hook guide member for each of the rails of the track mounted for vertical movement on and relative to, said sub-frame at each end thereof on said vertically extending guide-rod means on said sub-frame; a rail hook, for

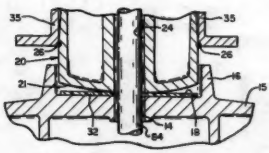


externally engaging a rail of the track, in each of said guide members; means for adjusting the position of a rail hook in its guide member, longitudinally of said sub-frame; track aligning jack means for moving said sub-frame laterally of said main frame; and track lifting jack means connected to each of said guide members to move each member, with its hook, vertically of said sub-frame along said guide-rod means to adjust the vertical position of said hook relative to said sub-frame and to lift said track vertically.

4,565,134
CYLINDRICAL SURFACE RAILCAR CENTER PLATE

Philip Groelz, 15828 S. Thayer Rd., Oregon City, Oreg. 97045

Filed Mar. 28, 1984, Ser. No. 594,920
Int. Cl.[4] B61F 5/16
U.S. Cl. 105—199 C 2 Claims



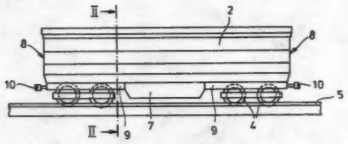
1. In a center plate structure for a railway car, a truck bolster having a center plate bowl facing upwardly, the bowl having an outer circular rim and a flat bearing surface within the rim, the car body having a center plate with a lower bearing surface having a cylindrical portion which is convex and cylindrical which bears, in rocking fashion, upon the center bowl surface, the axis of the cylindrical surface being aligned generally parallel with the longitudinal axis of the car, the radius of the cylindrical curvature being greater than the vertical distance between the center plate and the center of gravity of the car body (either when loaded or unloaded) and being either constant, as in a circular cylinder, or varying, as in a generally ellipsoid cylinder.

4,565,135

CENTER SILL, FOR ACCOMMODATING THE COUPLING FACILITIES OF A RAILROAD CAR

Jürg Zehnder, Uitikon, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 4, 1983, Ser. No. 481,760
Claims priority, application Switzerland, Apr. 15, 1982, 2279/82
Int. Cl.[4] B61F *1/00, 1/08*
U.S. Cl. 105—420 5 Claims



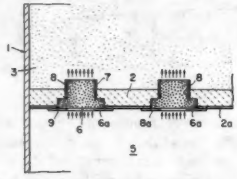
1. A center sill of a railcar for accommodating coupling facilities comprising two substantially Z-shaped hollow sections arranged in mirror image to each other, said substantially Z-shaped hollow sections each having an upper section strip and a lower section strip joined by a connecting member wherein said two substantially Z-shaped hollow sections are joined together at their upper section strips, each of the connecting members of said substantially Z-shaped hollow sections have a pair of substantially parallel spaced apart longitudinal struts being connected by a plurality of transverse struts which define with said longitudinal struts a plurality of hollow chambers wherein said center sill at the ends close to the end of the railcar is provided with a recess of length l and height h which receives a reinforcing shaped part wherein said recess runs along the lower side of the first transverse strut of said plurality of transverse struts next to the upper section strip of said substantially Z-shaped hollow sections, then substantially perpendicular across at least one of said plurality of hollow sections, then along the upper side of the lower section strip of said substantially Z-shaped hollow sections and then substantially perpendicular across at least one of said plurality of hollow sections such that the recess runs in a transverse direction over the entire profile of the center sill.

4,565,136

FLUIDIZED BED COMBUSTION FURNACE

Masahiro Nakamura, Yokosuka, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Continuation of Ser. No. 585,342, Feb. 29, 1984, abandoned. This application Apr. 19, 1985, Ser. No. 724,795
Claims priority, application Japan, Mar. 1, 1983, 58-33085
Int. Cl.[4] F23G *5/30*
U.S. Cl. 110—245 10 Claims



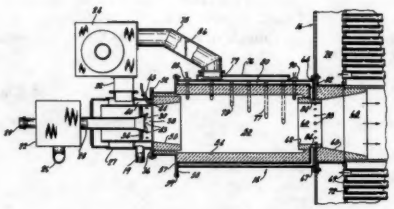
1. In a fluidized bed combustion furnace having an air dispersion plate at a lower part thereof, the improvement wherein the air dispersion plate is provided with a large number of air injection nozzles uniformly distributed therethroughout at intervals, the air injection nozzles being made of a porous refractory material which has good air permeability, high heat resistance, and high wear resistance and being so constructed and supported in the air dispersion plate that the total quantity of fluidizing air injected and dispersed through the air dispersion plate must pass through the air injection nozzles, said air dispersion plate being formed with uniformly distributed countersunk through holes each having a downwardly directed shoulder formed integrally with the air injection nozzle, and each air injection nozzle being provided with a bottom flange, and wherein each nozzle is fitted in one of the countersunk holes with the bottom flange thereof abutting on the shoulder and means being provided to hold the nozzle in the countersunk hole.

4,565,137

BIO-MASS SUSPENSION BURNER

Richard C. Wright, Mequon, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Continuation of Ser. No. 521,255, Aug. 8, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,459
Int. Cl.[4] F23D *1/02*
U.S. Cl. 110—264 8 Claims



1. A burner for a combination mixture of particles of solid bio-mass fuel and air comprising:

means for providing a primary air stream;

means for entraining said solid fuel particles in said primary air stream;

a generally cylindrical, elongate combustor means having a first end and a second end;

means for injecting said primary air stream and entrained fuel particles through said first end of said elongate combustor means, said combustor means having an exit at the second end thereof;

means for providing a secondary air stream and means for injecting said secondary air stream through said first end of said combustor means in surrounding relation to said primary air stream and entrained solid fuel particles; said injecting means for said primary and said secondary air streams including diffuser means to impart a swirl to the air and solid fuel particles entering said combustor means;

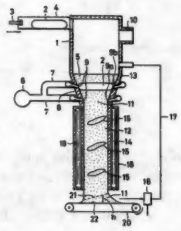
means for providing a tertiary air stream and means for injecting said tertiary air stream into said combustor means at a plurality of locations along the length thereof; and

means for providing a quartiary air stream and means at the exit of said combustor means for injecting said quartiary air stream outwardly of said combustor means and into the combustion mixture leaving said combustor means through said exit.

4,565,138
THERMAL DECOMPOSITION FURNACE OF WASTE TIRES

Yoshihiko Ueda, Chiba; Ikuo Saito, Tokyo; Kazumasa Sakae, Yachiyo, and Tetuo Oogiri, Tokyo, all of Japan, assignors to Onoda Cement Co., Ltd., Japan

Continuation of Ser. No. 557,332, Dec. 2, 1983, abandoned. This application Jan. 7, 1985, Ser. No. 689,461
Claims priority, application Japan, Aug. 25, 1982, 57-147199
Int. Cl.[4] F23G *15/00*
U.S. Cl. 110—346 1 Claim



1. A method for thermally decomposing waste tires including the steps of:

providing upper and lower bed sections communicating with each other and forming a vertical decomposition chamber;

filling the upper and lower sections with a granular refractory material to form a vertical column of such material;

fluidizing the granular material in the upper section by injecting air at two vertically spaced levels into the upper section, directing the air tangentially into the upper level of the upper section, and directing the air injected into the lower level toward the center of the upper section;

maintaining a condition capable of the thermal decomposition of tires in the upper section;

introducing uncommuniuted tires one at a time into the upper section;

restricting the rate of descent of the tires through the column of granular material and abrading any decomposition products from the unburnable parts of the tires by means of the granular material as the tire descends through the column, said restricting step including controlling the rate of descent of the tires through the upper section by progressively restricting in a downward direction the cross-sectional size of the upper section;

discharging the granular material and the unburnable materials of the tires through the bottom of the lower section onto a laterally moving conveyor, causing the granular material to flow onto the conveyor by progressively increasing the spacing from the conveyor of the lower end of the lower section in the direction of movement of the conveyor;

separating the unburnable materials from the granular material; and

recycling the withdrawn granular material into the upper section.

4,565,139
METHOD AND APPARATUS FOR OBTAINING ENERGY

Warnie L. Sage, Littleton, and Thomas E. Stringfellow, Aurora, both of Colo., assignors to Stearns Catalytic World Corp., Denver, Colo.

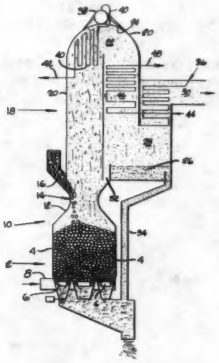
Filed Sep. 12, 1984, Ser. No. 649,558
Int. Cl.[4] F23D *1/00*
U.S. Cl. 110—347 19 Claims

1. A process for obtaining energy from a low BTU, low volatile content, low carbon and high ash fuel using a first combustor having an exit end and a second combustor having an entrance end, comprising:

providing quantities of a low BTU, low volatile content, low carbon and high ash fuel having various particle sizes;

forming a passageway between the first combustor and the second combustor by connecting the exit end of the first combustor and the entrance end of the second combustor together;

introducing the quantities of fuel into said passageway;



moving a gaseous stream through said passageway at a velocity sufficient to separate the quantities of fuel into finer particles and coarser particles;

combusting the coarser particles in the first combustor to generate heat;

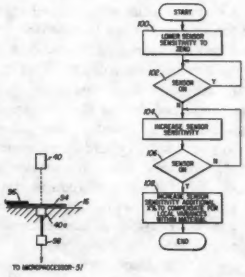
combusting the finer particles in the second combustor to generate heat; and

using the generated heat to provide useful energy.

4,565,140
METHOD AND APPARATUS FOR AUTOMATICALLY ADJUSTING THE SENSITIVITY OF EDGE SENSORS IN A SEMI-AUTOMATIC SEWING MACHINE

Charles R. Martell; Donald D. Isett, both of Dallas, and Stephen S. Treadwell, Richardson, all of Tex., assignors to Microdynamics, Inc., Dallas, Tex.

Filed Feb. 6, 1984, Ser. No. 577,579
Int. Cl.[4] D05B *19/00*
U.S. Cl. 112—121.11 9 Claims



1. In a sewing machine having a reciprocable needle for stitching seams in material advanced in a feed direction, seam length control apparatus comprising:

means having variable sensitivity for detecting a material discontinuity in advance of a seam;

means for controlling an operation of the sewing machine in response to detection of said material discontinuity by said detecting means; and

means for automatically adjusting the sensitivity of said detecting means to compensate for variances in the material being sewn.

4,565,141

SEEDING APPARATUS WITH FERTILIZER APPLICATOR

Ivyl D. Kopecky, Ypsilanti, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Dec. 19, 1983, Ser. No. 563,198

Int. Cl.[4] A01C *23/02, 5/00*

U.S. Cl. 111—7 **9 Claims**

1. A planting apparatus comprising:

a tubular shank member having a pair of passageways therethrough extending from an upper end to lower discharge ports in each of said passageways, the port from a first of said passageways opening at a lower level, when the shank is in working position than the port from the second of said passageways;

a furrow opening point mounted on the lower end of said shank member and preceding the passageways in the normal direction of travel of said shank member when in a working position;

the first passageway being immediately to the trailing side of said furrow opening point and its discharge port opening above the lower edge of the furrow opening point, and

a sealer plate mounted on said shank member in position above the discharge port from the first of said passageways, to the rear of said furrow opening point and said first passageway, and below the discharge port of said second passageway, said sealer plate extending laterally outwardly on both sides of said shank member and tapering outwardly from the shank in rearward direction to be substantially wider at the rear than at the front to form rear wing members, the wing members being bent downwardly at the rear portions of the sealer plate along bend lines that extend from the outer edges of the sealer plate inwardly toward the shank in rearward direction so the wing members converge in rearward direction so that when the shank member is in working position the sealer plate is below the surface of the ground and the wing members pack dirt into a furrow opened by said furrow opening point prior to the passage along the furrow of the discharge port of said second passageway.

4,565,142

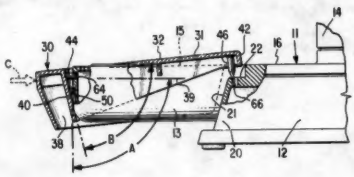
SEWING MACHINE BED EXTENSION

Leo E. McGann, Cranford, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 10, 1985, Ser. No. 743,124

Int. Cl.[4] D05B *73/10*

U.S. Cl. 112—260 **5 Claims**



1. A bed extension for a sewing machine having a frame including a supporting base, a cantilevered cylinder bed extending from said base and formed with a planar work supporting surface, and spaced angularly related bed extension locating surfaces;

said bed extension including a planar work supporting surface, and integral angularly related segments adapted when positioned abutting in contiguous relation with said locating surfaces on said sewing machine frame to position the working supporting surface of said bed extension coplanar with said cylinder bed work supporting surface;

the angular relation between said bed extension segments being formed less than the angular relation between said locating surfaces on said sewing machine frame so that deformation of said bed extension segments and development of internal stresses therebetween is required in order to position said segments in contiguous relation with said locating surfaces on said sewing machine frame;

said bed extension segments being biased against said locating surfaces of said sewing machine frame by said internal stresses;

each complemental set of sewing machine frame locating surface and bed extension segment being formed one with a substantially perpendicular aperture and the other with a substantially perpendicular projection arranged for engagement with said aperture to lock said bed extension on said sewing machine frame when said bed extension segments are positioned in contiguous relation with said sewing machine frame locating surfaces.

4,565,143

METHOD OF AUTOMATICALLY ADJUSTING THREAD TENSION IN A SEWING MACHINE

Susumu Hanyu; Kenji Kato, and Kazumasa Hara, all of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1984, Ser. No. 573,565

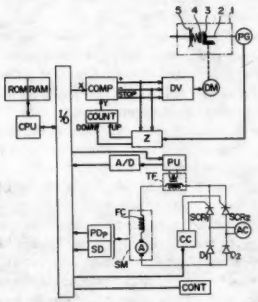
Claims priority, application Japan, Feb. 1, 1983, 58-13687

Int. Cl.[4] D05B *47/04*

U.S. Cl. 112—262.1 **4 Claims**

1. A method for automatically adjusting tension of a thread passing to a needle in a sewing machine having a drive motor operatively connected to a needle bar carrying a needle which is vertically reciprocated to penetrate a fabric to be sewn, thread tension means operated in ony way to increase tension of the thread and operated in the other way to decrease tension of the thread extended to said needle, and a microcomputer including a read only memory for storing a plurality of thread tension control data each being specific to fabrics of different thicknesses and different hardnesses, and a random access memory for temporarily storing variable load signals, the method comprising the steps of:

(a) detecting changes of a load applied to said needle bar when the needle penetrates the fabric;
(b) converting the detected changes of the load into a data representing a property of said fabric;
(c) storing said fabric property-representing data in said random access memory;
(d) reading out from said read only memory a new thread

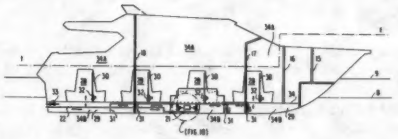


tension control data which corresponds to said fabric property representing data; and
(e) comparing said read out new thread tension control data with a data representing a present value of tension applied to said thread and causing the thread tension means to be operated in said one or other way in dependence upon the value of said thread tension control data until said value of said new thread tension control data is reached.

4,565,144
TOWEL SUPPORT
John D. Ricci, 6942 Well Springs Rd., No. 9-H, Midvale, Utah 84047
Filed Dec. 1, 1983, Ser. No. 557,054
Int. Cl.[4] A41F *1/02*
U.S. Cl. 112—437 **4 Claims**

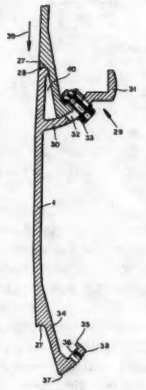
1. A towel support for maintaining a towel from a hanger device comprising, a slot cut on a bias to the towel weave through vertically adjacent knots of said towel weave at an angle in a range of angles of from thirty to sixty degrees (30° to 60°) to the vertical of said towel weave, an end of said slot closest to a towel corner is spaced apart from the towel sides proximate to said corner a minimum of two (2) inches from and at right angles to each said side.

4,565,145
MARINE OBSERVATORY CRAFT
Phillip L. Mayall, 19 Garden Grove, Carrara, Queensland, Australia, and Edward M. Whitten, 105 Tarawara Ave., Mudgeeraba, Queensland, Australia
Filed May 2, 1984, Ser. No. 606,102
Int. Cl.[4] B63B *1/12*
U.S. Cl. 114—61 **6 Claims**



1. A marine observatory craft for viewing underwater locations comprising a pair of parallel spaced apart planing type hulls, viewing means located in each hull, at least one transverse bulkhead dividing each hull into a plurality of separate internal compartments which are sealed from each other, at least one ballast tank disposed in each internal compartment and defining a seat located adjacent said viewing means, a control cabin superstructure interconnecting said hulls and located above each of said plurality of internal compartments in direct open communication therewith, and means for selectively flooding and emptying said ballast tanks whereby said craft may be disposed in an observing mode in which the viewing means is located below the water line and a travelling mode wherein the viewing means is located above the water line respectively.

4,565,146
BOAT HULL AND METHOD OF MAKING SAME
Jaroslav Koser, Braunau-Ranshofen, and Theodor Eder, Perchtoldsdorf, both of Austria, assignors to Austria Metall AG, Vienna, Austria
Filed Oct. 13, 1981, Ser. No. 311,014
Claims priority, application Austria, Oct. 13, 1980, 5074/80
Int. Cl.[4] B63B *3/00, 5/24*
U.S. Cl. 114—79 R **5 Claims**



1. A ship hull comprising:

a plurality of transverse and generally parallel ribs;

a plurality of side-by-side plank-forming and generally parallel elongated profiles each having two generally parallel longitudinal edges abutting the edges of the adjacent profiles of nonplanar three-dimensional shape, one of the edges being formed with an inwardly extending flange engaging the ribs, whereby the flanges stiffen the profiles, one of each of the longitudinal edges of each profile being formed with an outwardly rounded seat and the other of each of the longitudinal edges of each profile being formed with a complementary rounded edge, the flange extending inwardly from adjacent the rounded edge and having a curved portion having a center of curvature at the respective rounded edge, each of the other edges having an attachment flange enageable with the curved portion;

means including fasteners extending through the flanges and into the transverse ribs for securing the profiles to the transverse ribs; and

means forming watertight joints between the abutting longitudinal edge of the profiles; and

means including screw fasteners engaged between the abutting longitudinal edges for securing same together and compressing the respective joints, the screw fasteners being bolts engageable between the attachment flanges and the curved portions for securing the profiles together at any of a multiplicity of relative positions angularly offset about the center.

4,565,147

MUTUAL AND MULTI-RESTRAINED FIXING FENDER

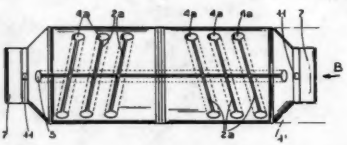
Vanes Bortolotti, Via Balzani, 12-40069 Zola Predosa (Bologna), Italy

Filed May 7, 1984, Ser. No. 607,537

Claims priority, application Italy, Dec. 23, 1983, 5137/83[U]

Int. Cl.[4] B63B *59/02*

U.S. Cl. 114—219 **5 Claims**



1. An impact-resistant fender for protecting the exposed surface of a manufactured article from abrasion, said fender element comprising:

(a) at least one tubular element formed from a resilient, impact-resisting material, having a longitudinal axis;

(b) at least one groove formed within said tubular element having a circular interior portion and a slot portion communicating with the surface of said element and being aligned as a chord of the tubular element;

(c) at least one second groove formed within said tubular element having a circular interior portion and a slot portion communicating with the surface of said element and being aligned parallel to the longitudinal axis of said tubular element along the plane of a diameter of said tubular element.

4,565,148

SHUNTER AND METHOD FOR DIRECTING THE LONGITUDINAL AXIS OF A SHIP

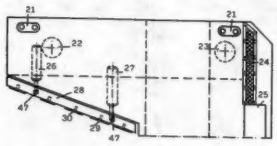
Rudi W. Verhoosel, K1. Jonkvrouwstr 42, 4515 EK., Yzendyke, Netherlands

Filed Nov. 29, 1982, Ser. No. 445,077

Claims priority, application Netherlands, Dec. 13, 1981, 8105603

Int. Cl.[4] B63B *21/56*

U.S. Cl. 114—242 **6 Claims**



1. A shunter for use in maneuvering a ship particularly in entering and passing relatively narrow passageways, such as a lock of a canal, comprising:

a shunter having a deck and being capable of exerting substantial propulsion forces so as to maneuver a ship, and having a stern of substantially U-shape to fit about the bow or stern of said ship with a pair of legs having on the inner sides thereof at least one suction head; said suction heads being mounted to said pair of legs on said inner sides substantially below said deck adjacent the water line and being movable and adjustable by hydraulic cylinders so that said suction heads are adapted to be brought into contact with said bow or stern of said ship; and vacuum means connected to said suction heads; and said suction heads being adapted to be rigidly affixed, although only temporarily, to said ship by means of a vacuum in a location substantially near to the horizontal plane of the propulsion force of said shunter craft so as to be near where directional forces of said shunter craft are exerted; and said shunter craft and said ship in effect forming a single unit when affixed together, and said ship being adapted to be maneuvered into a desired position by propulsion means provided on said shunter craft exerting forces particularly in a direction perpendicular to the longitudinal axis of said ship.

4,565,149

SEMI-SUBMERGIBLE SPHERICAL RESIDENTIAL STRUCTURE

Richard Clasky, 2307 Panorama Dr., North Vancouver, British Columbia, and Wilfred Vogl, West Vancouver, both of Canada, assignors to Richard Clasky, Vancouver, Canada

Division of Ser. No. 357,181, Mar. 11, 1982, abandoned. This application May 15, 1985, Ser. No. 734,146

Int. Cl.[4] F24V *3/02*

U.S. Cl. 114—264 **5 Claims**

1. A method of fabricating a spherical residential structure comprising:

(a) fabricating a lower spherical half shell and sponson around the maximum girth of the half shell on a submergible support;

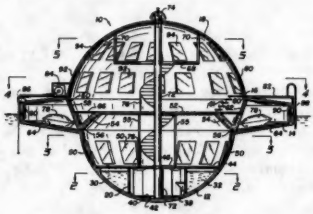
(b) erecting a plurality of room-forming walls to the bottom of said lower half shell;

(c) installing machinery and equipment in said rooms;

(d) forming a lower floor on the top of said walls;

(e) forming a main floor integral with an annular skirt extending downwardly and outwardly from the outer periphery of said floor to an upper edge of said lower half shell and integral with an upwardly and outwardly inclined sponson wall extending from the outer periphery of said skirt to an upper inner edge of said sponson;

(f) erecting an upper spherical half shell over said lower half shell such that a lower edge of said upper half shelf an inner upper edge of said sponson; and



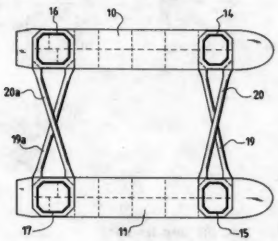
(g) lowering said submergible support in a body of water to float said structure.

4,565,150

OFFSHORE VESSEL

Hadar Lidén, Västra Frölunda, Sweden, assignor to Gotaverken Arendal AB, Sweden

Filed Dec. 6, 1983, Ser. No. 558,508
Claims priority, application Sweden, Dec. 7, 1982, 8206978
Int. Cl.[4] B63B *35/44*
U.S. Cl. 114—265 **2 Claims**



1. In an offshore vessel of the kind having two parallel pontoons and an operating platform carried by said pontoons by means of at least two pairs of vertical columns, the improvement that columns to opposite sides of a longitudinal middle plane through the vessel, and located in the same transverse plane, are interconnected by means of a pair of transverse braces, crossing each other as seen in a horizontal plane, running close to each other without any interconnection.

4,565,151

APPARATUS FOR INDICATING A RANGE POSITION FOR AN AUTOMATIC TRANSMISSION INSTALLED IN A VEHICLE

Shuuichi Buma, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

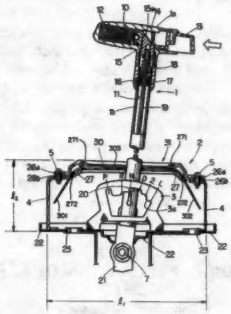
Filed May 24, 1984, Ser. No. 613,530
Claims priority, application Japan, Jun. 8, 1983, 58-088293[U]
Int. Cl.[4] G01D *5/02*
U.S. Cl. 116—28.1 **4 Claims**

1. An apparatus for indicating a range position for an automatic transmission having a manual control lever to be movably operated by a vehicle operator to obtain a selected range position, said apparatus comprising:

a case fixed to a vehicle floor and having an upper plate with an elongated slot through which said control lever extends, first and second ends of said elongated slot defining a range of movement of said manual control lever, said upper plate having an elongated window adjacent said elongated slot, a pair of first apertures each being located adjacent an end of said slot, a corresponding pair of second apertures each being located adjacent a corresponding one of said first apertures, and a pair of corner portions each disposed in a passage between corresponding apertures of said first and second pairs of apertures;

a control position scale fixed within said elongated window, said control position scale having a series of apertures corresponding to range positions; and

a range position indicating means inserted within said slot and slidably moved by operation of said manual control



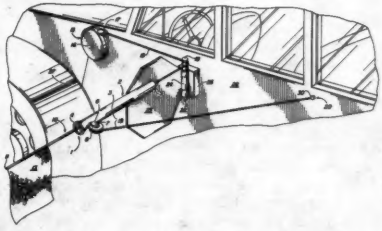
lever for indicating the selected range position in one aperture of said series of apertures in the control position scale, the range position indicating means having a relatively thick intermediate portion adjacent said manual control lever and relatively thin end portions, the end portions slidably disposed within the passages defined by said pairs of first and second apertures and extending over said corner portions to bend said end portions away from said upper plate, the intermediate portion being disposed in a plane generally parallel to said upper plate.

4,565,152

SAFETY FLAG

Charles O. Bennett, P.O. Box 712, Benton, La. 71006

Filed Dec. 19, 1983, Ser. No. 562,749
Int. Cl.[4] G09F *17/00*
U.S. Cl. 116—50 **19 Claims**



1. A safety flag for a vehicle provided with a stop arm mechanism having a hinge and capable of opening into an open configuration and closing into a closed configuration on the hinge with respect to the vehicle, comprising:

(a) receiving means having a first end carried by the stop arm mechanism;

(b) an opening provided in the wall of said receiving means and guide pulley means rotatably provided on said receiving means;

(c) a flag rod having one end inserted in the opposite end of said receiving means from said first end and a flag attached to the opposite end of said flag rod;

(d) bushing means carried by the stop arm and a cable mount attached to the vehicle in spaced relationship with respect to said bushing means;

(e) recoil pulley means spaced from said cable mount and said bushing means, said recoil pulley means secured to the vehicle; and

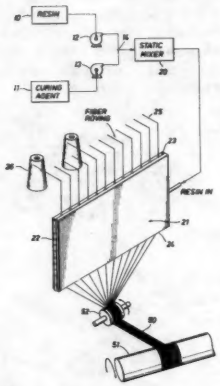
(f) cable means retractably wound in said recoil pulley means and one end of said cable means extending from said recoil pulley means around said bushing means, into said receiving means, through said opening and around said guide pulley means, said one end provided in fixed attachment to said cable mount, and said one end of said flag rod attached to said cable means, whereby opening of the stop arm mechanism to the open configuration extends a segment of said cable means from said recoil pulley means and causes said opposite end of said flag rod and said flag to project from said opposite end of said receiving means and closing of the stop arm mechanism to the closed configuration causes said segment of said cable means to retract into said pulley means and said opposite end of said flag rod and said flag to retract into said opposite end of said receiving means.

4,565,153

APPARATUS FOR IMPREGNATION OF REINFORCING FIBERS

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 16, 1984, Ser. No. 571,259
Int. Cl.⁴ B05C *3/02*
U.S. Cl. 118—405 **9 Claims**



1. An apparatus for impregnating reinforcing fibers with mixed resin and curing agent comprising:

a first source of resin and a second source of curing agent;

means coupled to said sources for supplying desired amounts of said resin and curing agent under pressure to a common point;

a mixing device having an inlet and discharge, the inlet of said mixing device being connected directly to said common point;

an enclosed chamber, said chamber being formed from a pair of box-shaped members joined at their edges to form said chamber, said box-shaped members having a length and width that is substantially greater than their depth, said chamber having inlets and outlets formed on opposite sides of said chamber for the reinforcing fibers, a resin inlet formed in another side of said chamber, the discharge of said mixing device being directly coupled to said resin inlet in said chamber whereby said reinforcing fibers may be passed through said chamber and coated with resin; and

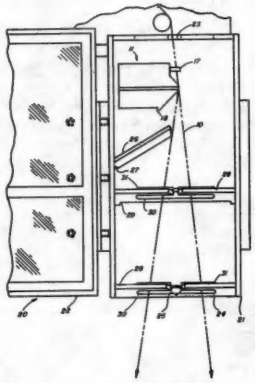
an adjustable orifice disposed on the outlet of said chamber to remove excess resin from said reinforcing fibers.

4,565,154

PROCESS AND APPARATUS FOR APPLYING AND CONFINING FINISH

Phillip L. Mullins, Matoaca, Va.; James G. Neal, Raleigh, N.C., and Jeffrey T. Perkins, Richmond, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 497,530, May 24, 1983, Pat. No. 4,544,579, which is a continuation-in-part of Ser. No. 303,330, Sep. 18, 1981, abandoned. This application Jun. 27, 1985, Ser. No. 749,327
Int. Cl.⁴ B05C *3/00*
U.S. Cl. 118—410 **18 Claims**



1. Apparatus for applying finish to yarn, comprising:

an applicator body, provided with a duct which supplies finish to applicator face, the face comprising the delivery area of the duct and the surface area of two primary arcs, one of the primary arcs being located on either side of the duct and curving in the general direction of yarn travel, the central angle subtended by each of the primary arcs ranging from about 2 to 9 degrees, the edge of each of the primary arcs remote from the duct terminating in a secondary arc which subtends a central angle ranging from about 30 to 60 degrees and having a radius length shorter than that of either of the primary arcs and curving in the direction of yarn travel.

15. Apparatus for confining a spray of finish issuing from a traveling yarn and a finish application device during and subsequent to application of the finish, comprising:

a. a housing to substantially enclose the finish application device and having openings therein for the yarn entrance and exit and for the take-off of excess finish;

b. a plate mounted beneath the finish application device and oriented with respect to the housing such that any finish overflow and drips from the finish application device coming into contact therewith feed by gravity away from the traveling yarn to the take-off opening; and

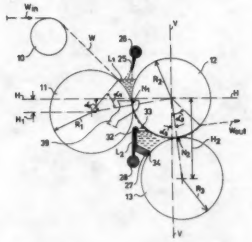
c. at least one baffle disposed between the plate and the take-off opening and oriented with respect to the housing such that any finish overflow and spray coming into contact therewith feed by gravity away from the traveling yarn to the take-off opening, the baffle(s) having a slot therein for passage of the yarn and a raised lip around the slot.

4,565,155

SIZE PRESS

Erkki Koski, Jyväskylä, Finland, assignor to Valmet Oy, Finland

PCT No. PCT/FI82/00049, § 371 Date May 26, 1983, § 102(e) Date May 26, 1983, PCT Pub. No. WO83/01636, PCT Pub. Date May 11, 1983
PCT Filed Oct. 25, 1982, Ser. No. 504,040
Claims priority, application Finland, Oct. 27, 1981, 813356
Int. Cl.[4] B05C *3/132*
U.S. Cl. 118—412 11 Claims



1. A size press, which comprises three coating rolls (**11**, **12**, **13**), which form two press nips (N_1, N_2) as pairs with each other, the paper web (W) to be treated being passed through the said press nips so that both sides of the web (W) are treated in the said nips (N_1, N_2), characterized in that the vertically uppermost roll (**12**) of the size press constitudes the centre roll of the size press, in connection with which centre roll the two coating nips (N_1, N_2) are formed so that the first coating nip (N_1) is placed at a short angular distance (α_1) underneath the horizontal plane (H—H) placed through the axis of the said centre roll (**12**), that the second coating nip (N_2) is formed by the third coating roll (**13**), which is placed substantially in the vertical plane (V—V) placed through the centre point of the centre roll (**12**), or at a small angle α_2) after the said plane, and that, as preceding the first nip (N_1), size-feed devices **25**, **26** have been provided at the centre-roll (**12**) side of the run of the web (W), which size-feed device **25**, **26** feed a first size pool (L_1) or layer into the substantially vertical pit between the centre roll (**12**) and the web (W), as well as that, preceding the second nip (N_2), a second set of size-feed device **27**, **28**) has been provided in the substantially horizontal pit formed by the centre roll (**12**) and by the third coating roll (**13**), the said second size-feed devices (**27**, **28**) forming the second size pool (L_2) or layer at the opposite side of the web (W), as compared with the said first size pool (L_1) or layer, the said devices being arranged as jointly operative so that, while the sizing is performed, the web (W) is supported by a roll face.

4,565,156

APPARATUS FOR PERFORMING SOLUTION GROWTH RELYING ON TEMPERATURE DIFFERENCE TECHNIQUE

Jun-ichi Nishizawa, and Yasuo Okuno, both of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed Feb. 28, 1983, Ser. No. 470,541
Claims priority, application Japan, Mar. 1, 1982, 57-32750
Int. Cl.[4] H01L *21/208*
U.S. Cl. 118—412 10 Claims

1. An apparatus for performing an epitaxial growth of a compound semiconductor from solution using a temperature difference technique, comprising:

reactor means having external furnace means;

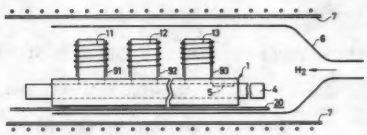
boat means housed in said reactor means;

at least one reservoir means for containing a melt and carried on said boat means within said reactor means;

electrical insulation means disposed around said reservoir;

heating means provided within said reactor means directly disposed around said insulation means to heat said melt; and

a plurality of quartz cooling tubes provided at the bottom of said boat means within said reactor means for conveying a



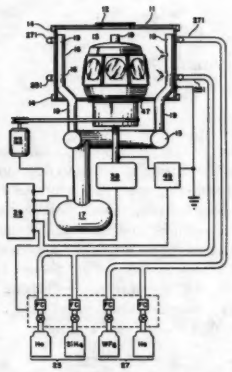
coolant gas for developing a uniform vertical temperature difference in said melt mainly by thermal exchange between said heating means and cooling tubes while effectively suppressing thermal fluctuation in the melt from said furnace means.

4,565,157

METHOD AND APPARATUS FOR DEPOSITION OF TUNGSTEN SILICIDES

Daniel L. Brors, Los Altos Hills; James A. Fair, Mountain View, and Kenneth A. Monnig, Palo Alto, all of Calif., assignors to Genus, Inc., Mountain View, Calif.

Filed Mar. 29, 1983, Ser. No. 480,030
Int. Cl.[4] C23C *11/08*
U.S. Cl. 118—719 25 Claims



1. A device for chemical vapor deposition of tungsten silicide comprising:

a vacuum housing for containing reactant gas and a substrate;

mixing chamber means for uniformly mixing tungsten hexafluoride and silane to form said reactant gas, said mixing chamber means connected directly to said housing to allow introduction of said reactant gas into said housing, said mixing chamber means constructed of a first material having a high thermal conductivity and in thermal contact with said housing and not being actively heated so that said mixing chamber means can follow temperature excursions of said housing by said thermal contact;

heating means in proximity to said substrate for heating said substrate to a first temperature to cause chemical vapor deposition onto said substrate of a second material formed from said reactant gas;

first cooling means for actively maintaining said housing at a second lower temperature to substantially avoid chemical vapor deposition onto said housing of said second material formed from said reactant gas, said first cooling means for

extracting thermal energy from said housing while said second material is being deposited on said substrate; and evacuation means for creating a good vacuum in said vacuum housing, said vacuum at times being as low as 10 mT.

4,565,158

EVAPORATOR CELL FOR VACUUM DEPOSITION ON SUBSTRATES

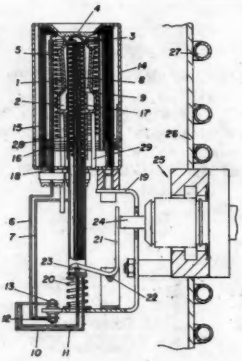
Jürgen Koprio, Triesen, Liechtenstein, assignor to Balzers AG, Fed. Rep. of Germany

Filed Jul. 30, 1984, Ser. No. 635,906

Claims priority, application Switzerland, Sep. 5, 1983, 14848/83

Int. Cl.[4] C23C *3/12*

U.S. Cl. 118—726 **8 Claims**



1. An evaporator cell for applying a thin layer of evaporative material on a substrate by vacuum deposition, comprising a cell housing having one end with a vapor escape aperture and an opposite end with a plug accommodating opening, a plug extending in the opening and having a closed end which is positionable adjacent the vapor escape aperture, and means for moving said plug to vary the spacing between said closed end of said plug and said aperture for regulating the amount of vapor which is to escape, said closed end of said plug having a larger diameter than that of said aperture.

4,565,159

ANIMAL FEEDER

John W. Sweeney, Boerne, Tex., assignor to Sweeney Enterprises, Inc., Boerne, Tex.

Filed Aug. 10, 1984, Ser. No. 640,026

Int. Cl.[4] A01K *61/02, 5/00*

U.S. Cl. 119—53 **14 Claims**

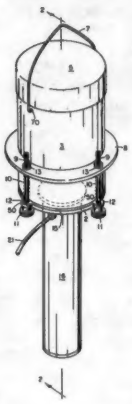
5. An animal feeder comprising:

a circular base plate with a plurality of flanges positioned about the perimeter of said circular base plate operable to accept the passage of screws therethrough;

vibrating means connected to the bottom side of said circular base plate;

cylindrical flexible wall means of less diameter than said circular base plate with flanges positioned about the perimeter and extending outwardly therefrom and aligned with said flanges of said base plate;

a plurality of adjusting screw means connecting said wall flanges to said base plate flanges to maintain said flexible wall means in spaced relation to said base plate and operable to transmit vibrations of said base plate to said flexible wall means and thereby induce flexing in said cylindrical flexible wall means to impart a swirling motion to material



being vibrated out of the opening between said circular base plate and said flexible wall means.

4,565,160

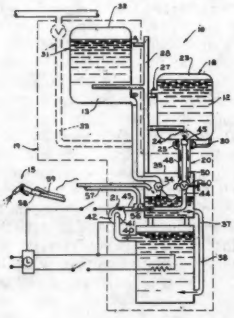
LIVESTOCK TREATMENT SYSTEM

Melvin J. Cook, HCOI, Box 231, Mesa, Wash. 99343

Filed Mar. 30, 1984, Ser. No. 595,252

Int. Cl.[4] A01K *13/00*

U.S. Cl. 119—159 **16 Claims**



1. A livestock treatment system for producing and selectively discharging a liquified mixture of carrier liquid such as water and a material such as salve or molasses held in a material holding container, said material being flowable when heated, said system comprising:

bracket means for releasably supporting the material holding container;

an elongated drain tube extending between a bottom end and an open top end, the top end being situated adjacent the bracket means and adapted to extend into the material holding container supported on the bracket means, to receive and drain material therefrom;

a mixing tank connected to the drain tube to receive material through the bottom end thereof;

carrier liquid delivery means for supplying carrier liquid to the mixing tank;

circulating means for cycling carrier liquid and said material through a circuit including the mixing tank;

heating means in said circuit for heating the carrier liquid

passing through the circuit to a temperature sufficient to reduce the material to a flowable state;

jet means connected to the circulating means with a nozzle adjacent the drain tube top end, for spraying a jet of heated carrier liquid against material within the container releasably supported on the bracket means so material within the container directly adjacent the nozzle will be engaged by the heated carrier liquid and will be reduced to a flowable state by the heated carrier liquid and will flow with the carrier liquid as a liquified mixture through the drain tube to the mixing tank; and

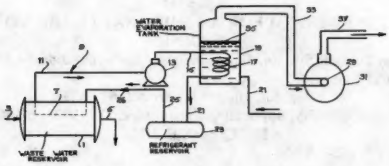
wherein the circulating means includes an applicator means for selective operation to discharge the liquified mixture.

4,565,161

STEAM GENERATION

Andre Choquette, Ste-Thérèse, Canada, assignor to Uraken Canada Limited, St-Eustache, Canada

Filed Apr. 8, 1985, Ser. No. 721,154
Int. Cl.[4] F22B *1/02*
U.S. Cl. 122—32 **9 Claims**



1. Method of generating steam comprising:

providing a closed evaporation tank;

feeding water into said tank to form a pool having an evaporation level;

withdrawing heat from a heat source and heating said pool water therewith to a temperature below the boiling temperature, at a working pressure, of said pool water;

lowering the pressure, in said tank, over said level of said water pool, to cause evaporation of said pool water into vapor at a pressure lower than the working pressure, and

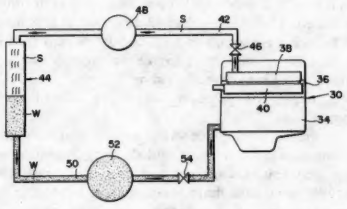
mechanically pressurizing said vapor to turn it into pressurized steam.

4,565,162

COOLING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Nakanobu Seki, Yokohama; Yoshimasa Hayashi, Kamakura, and Masakazu Uemura, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 24, 1982, Ser. No. 351,748
Claims priority, application Japan, Feb. 27, 1981, 56-28849
Int. Cl.[4] F01P *3/22*
U.S. Cl. 123—41.08 **15 Claims**



1. In a heat engine,

a cooling arrangement comprising:

a coolant jacket associated with said engine, said coolant jacket containing a coolant;

a heat exchanger in fluid communication with said coolant jacket;

a compressor interposed between said coolant jacket and said heat exchanger for compressing fluid induced from said coolant jacket and discharging said compressed fluid under pressure into said heat exchanger; and

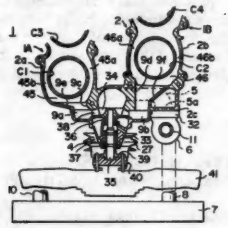
means for transmitting the fluid from said heat exchanger to an inlet of said coolant jacket.

4,565,163

V-TYPE ENGINE

Haruyoshi Ishimi, and Koji Asanomi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 19, 1984, Ser. No. 601,959
Claims priority, application Japan, Apr. 21, 1983, 58-70657; Mar. 26, 1984, 59-57717
Int. Cl.[4] F02B *67/00*; F01P *5/12*; F02B *75/22*
U.S. Cl. 123—41.44 **15 Claims**



1. A V-type engine having a crankshaft with an axis comprising a cylinder block having first and second cylinder banks, each cylinder bank having an outer side face and being provided with a row of a plurality of cylinders extending between front and rear end faces of the cylinder block in the axial direction of the crankshaft, the row of the cylinders in the first cylinder bank starting from a location near the front end face of the cylinder block and the row of the cylinders in the second cylinder bank starting from a location spaced apart from the front end face of the cylinder block, wherein the improvement comprises that a water pump of an engine cooling system is mounted on the front end face of the cylinder block substantially at the center between the first and second cylinder banks, and a coolant inlet-passage to the water pump is formed in the cylinder block between the front end face of the cylinder block at the second cylinder bank and the foremost cylinder in the second cylinder bank, the water pump having a pump chamber in which an impeller is rotated, said coolant inlet-passage being communicated with the pump chamber at one end and with a discharge conduit of a radiator at the other end, and said pump chamber being communicated with water jackets formed in the first and second cylinder banks, respectively, by way of first and second coolant feed passages.

4,565,164

INTERNAL COMBUSTION ENGINE CYLINDER-HEAD COVER

Masayuki Satoh, Toyota, and Yoshisada Wada, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

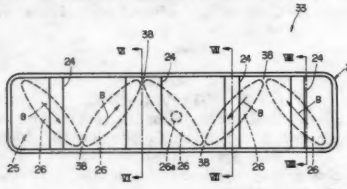
Filed Jan. 10, 1985, Ser. No. 690,180
Claims priority, application Japan, Jan. 30, 1984, 59-14735
Int. Cl.[4] F01M *13/04*
U.S. Cl. 123—41.86 **4 Claims**

1. A cylinder-head cover for use in an internal combustion engine, through which a blowby gas is suctioned into an intake passage, comprising:

a housing secured to a cylinder head, the housing having a

plurality of extension portions which extend in lateral direction thereof, an inlet port for introducing a blowby gas-oil mixture into the housing, and an outlet port for emitting the blowby gas into the intake passage; and

a plate means provided within the housing, the plate means forming a cylinder-head passage between its outer surface and an inner surface of the housing, in which the blowby gas-oil mixture passes, the plate means having its outer



surface on which a groove is formed such a way as the square of the cross-section of the cylinder-head passage is repeatedly large and small, whereby when a blowby gas-oil mixture passes through a cylinder-head cover, the oil and contaminants contained in the blowby gas-oil mixture drops on the outer surface of the plate means at the place where the square of the cross-section of the cylinder-head passage is large, and thereby the oil and contaminants are separated from the blowby gas-oil mixture.

4,565,165

INTERNAL COMBUSTION ENGINE

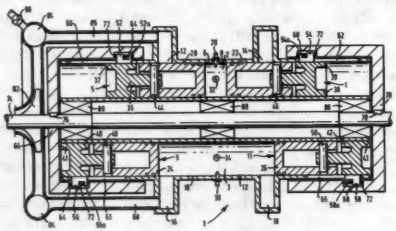
John P. S. Papanicolaou, Nissos Agia Trias, Eretria, Chalkidos, Greece

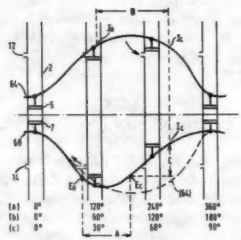
Filed Jul. 23, 1984, Ser. No. 633,199

Claims priority, application United Kingdom, Feb. 17, 1984, 8404159

Int. Cl.[4] F02B *75/26*

U.S. Cl. 123—51 BA **30 Claims**





1. In an internal combustion engine operable using a cycle having expansion, exhaust, intake and compression phases, which engine comprises at least one pair of opposed pistons which reciprocate in cylinder portions which are in fluid communication with each other via a common combustion chamber, the pistons being coupled to respective cam elements engaged with a common output shaft for converting the reciprocating motion of the pistons into rotational motion, and the cylinder portions having intake and exhaust ports in the cylinder walls arranged such that each intake port is engaged by one piston and each exhaust port is engaged by the respective opposed piston; the improvement comprising that the cam elements are provided with different cam profiles profiled at least along those cam portions proceeding the closing of the intake port to cause the respective pistons to uncover the respective exhaust and inlet ports in a timed sequence such that an exhaust stroke length formed between the opposed pistons when the exhaust port is initially opened, is longer than an intake stroke length formed between the opposed pistons when the inlet port is closed, at which time the exhaust port engaging piston has moved from the exhaust port by an amount of at least 10% of a distance from the exhaust port to the center of the common combustion chamber at ignition to produce a sufficient increase in effective volume of the expansion phase with respect to the intake phase to give hyper-expansion.

4,565,166

INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

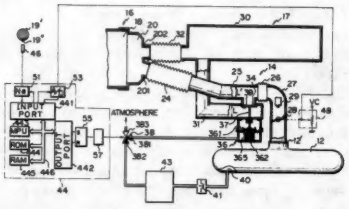
Keiso Takeda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 10, 1984, Ser. No. 629,336

Claims priority, application Japan, Oct. 11, 1983, 58-188532

Int. Cl.[4] F02B *27/02*

U.S. Cl. 123—52 M **12 Claims**



1. An intake system, for an internal combustion engine, comprising:

an air cleaner having a housing, an inlet at one side of the housing, first and second outlets at an opposite side of the housing, and an enlarged chamber inside the housing in direct communication with said outlets;

a main intake passageway connecting the first outlet of the air cleaner to the engine;

a throttle valve arranged in the main intake passageway;

a second intake passageway having a chamber of a predetermined volume, said second intake passageway having a first end connected to the second outlet of said air cleaner such that said second intake passageway is in fluidal communication with the enlarged chamber of said air cleaner, and having a second end spaced from said first end and connected to said main intake passageway at a position upstream of said throttle valve;

sensor means for detecting operating conditions of said engine; and

control means, responsive to the sensed operating conditions of the engine, for opening and shutting fluidal communication between said second end of said second intake passageway and said main intake passageway, the predetermined volume of the second intake passageway chamber being such that the main intake passageway has a first resonance open end located at the first outlet of the air cleaner when communication is shut between the second

end of the second intake passageway and the main intake passageway and a second resonance open end located at the connection between the second end of the second intake passageway and the main intake passageway when communication therebetween is open, whereby switching between two desired effective intake pipe lengths is attained according to varying operating conditions of the engine;

wherein said control means comprises:

valve means located where said main intake passageway is connected to the second end of said second intake passageway;

actuator means connected to said valve means for selectively operating said valve means; and

circuit means responsive to signals from said sensor means for providing electrical signals to said actuator means; and

wherein said circuit means comprises:

means for storing, in accordance with a multiplicity of operating conditions, data indicating whether said valve means should be open or shut;

means for calculating preset values of operating conditions at which the effective intake pipe length should be changed;

means for deciding at each detected operating condition, by using the calculated value for said condition, whether or not the valve means should be open;

means for operating said actuator means for causing said valve means to be opened when the decision is "yes"; and

means for operating said actuator means for causing said valve means to be shut when the decision is "no".

4,565,167

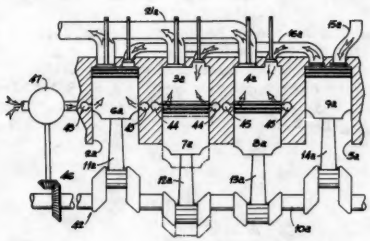
INTERNAL COMBUSTION ENGINE

Clyde C. Bryant, 1920 Forrest Ave., East Point, Ga. 30344

Continuation-in-part of Ser. No. 327,922, Dec. 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 230,752, Feb. 2, 1981, abandoned. This application May 21, 1984, Ser. No. 612,660

Int. Cl.[4] F02B *33/22*

U.S. Cl. 123—70 R **20 Claims**



2. A method of deriving mechanical work from combustion gas in an internal combustion engine having a two stroke power chamber in which the combustion gas is ignited and expanded, a compressor chamber in which an air charge is compressed and a piston operable in each chamber, comprising the steps of compressing an air charge in the compressor chamber, transferring the compressed air charge to the power chamber with the total combustion chamber volume of the power chamber being no greater than the volume of the charge transferred from the compressor chamber at the time of transfer such that there is no appreciable pressure drop during transfer, causing a predetermined quantity of fuel to be mixed with the air charge to produce a combustible mixture, causing the mixture to be ignited at substantially maximum pressure within the power chamber and expanding the combustion gas against the piston substantially beyond its initial volume.

7. A reciprocating internal combustion engine comprising a compressor chamber for compressing an air charge, a power chamber in which the combustion gas is ignited and expanded, a piston operable in each chamber and connected to a common crankshaft by connecting link means for rotating the crankshaft in response to reciprocation of each piston, a transfer duct communicating the compressor chamber with the power chamber through which duct the compressed charge is transferred to enter the power chamber, an intake valve controlling admission of air to said compressor chamber for compression, a transfer valve controlling admission of the compressed charge to said transfer duct, an intake valve controlling admission of the compressed air charge from the transfer duct to said power chamber, and an exhaust valve controlling discharge of the exhaust gases from the power chamber, said valves being timed to operate such that the air charge is maintained within the transfer duct and introduced into the power chamber without any appreciable drop in charge pressure so that ignition can commence at substantially maximum compression, means being provided for causing fuel to be mixed with the air charge to produce the combustible gas, and wherein said compressor chamber and the combustion chamber of said power chamber are sized with respect to the displaced volume of said power chamber with the total combustion chamber volume of the power chamber being no greater than the volume of the charge transferred from the compressor chamber at the time of transfer such that the exploded combustion gas can be expanded substantially beyond its initial volume when transferred to the power chamber.

4,565,168

VALVE CONTROL DEVICE, PARTICULARLY FOR VALVES OF INTERNAL COMBUSTION ENGINES

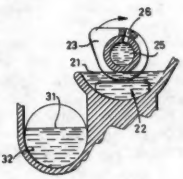
Jean-Pierre Rivere, Paris, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 26, 1984, Ser. No. 574,158

Claims priority, application France, Feb. 3, 1983, 8301676

Int. Cl.[4] F01L *1/46*

U.S. Cl. 123—90.34 **7 Claims**



1. A valve control device for an overhead camshaft engine having a cylinder head including at least one rotatable cam on a camshaft and at least one valve, said valve control device comprising:

valve drive means extending between one said cam and one said valve for transferring rotational movement of said cam into reciprocal movement of said valve in an opening direction;

return spring means associated with each said valve for biasing said valve in a closing direction;

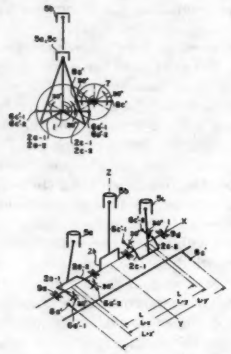
an isolated and independent bath of high viscosity lubricating oil in said cylinder head, wherein said valve drive means includes a sliding surface slidingly contacting each said cam, each said sliding surface being immersed in said bath; and

means for circulating said oil only within said cylinder head, whereby said high viscosity lubricating oil in said isolated and independent bath in said cylinder head does not communicate with oil outside of said bath.

4,565,169
BALANCER STRUCTURE FOR THREE-CYLINDER ENGINES

Tsunehiko Suzuki, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 412,660
Claims priority, application Japan, Aug. 31, 1981, 56-136882
Int. Cl.⁴ F16F *15/00*
U.S. Cl. 123—192 B **11 Claims**



1. A balancer structure of a three-cylinder in-line engine having three cylinders, the latter comprising first and third cylinders and a second cylinder between said first and third cylinders, a crankshaft having crank arms disposed at angles of 120° with respect to each other and operatively connected to a piston assembly within each of said cylinders, respectively, consisting of

a single countershaft adjacent and parallel to and rotated at the same speed as the crankshaft but in the opposite direction,

means comprising counterweights securely mounted on said crankshaft at positions thereof corresponding to the first and third cylinders for balancing of a part of inertia forces of reciprocating masses and the entire inertia forces of rotating masses;

each of said counterweights being disposed more than 90° from the crank arm for the corresponding cylinder and perpendicular to the crank arm of the second cylinder;

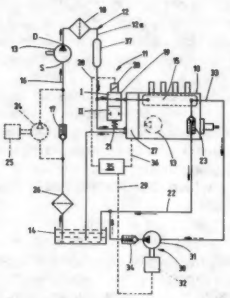
at least two balancers securely mounted on said countershaft at both ends thereof for balancing the remainder of the inertia forces of reciprocating masses and of couple of inertia of the crankshaft about axes perpendicular to the crankshaft.

4,565,170
CONTROL DEVICE FOR SHUTTING OFF AN INTERNAL COMBUSTION ENGINE

Hermann Grieshaber, Stuttgart; Albrecht Sieber, Ludwigsburg; Peter Schueler, Leonberg, and Helmut Steimer, Denkendorf, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 563,916
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304335
Int. Cl.⁴ F02M *63/02*
U.S. Cl. 123—359 **7 Claims**

1. A control device for shutting off an internal combustion engine, in particular a Diesel engine, comprising a fuel feed pump connected to a suction line connected to a fuel supply tank which during normal operation aspirates fuel from said fuel supply tank and pumps the fuel via a feed line embodied as a section of a supply line to a suction chamber of an injection pump, an overflow line connected to said suction chamber of said injection pump and to said fuel supply tank, a first check valve located in said overflow line between said suction chamber and said fuel supply tank, an electromagnetic shutoff control valve inserted into the feed line, said control valve being reversible from an operating position (I) which allows fuel to pass through said control valve in the feeding direction to a blocking operating position (II) in which fuel flowing from a compression side (D) of the feed pump to the suction chamber of the injection pump is blocked, an aspiration line connected to said suction chamber at one end and to said overflow line at its other end, an electric fuel pump inserted into said aspiration

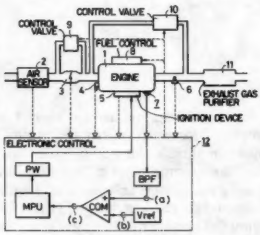


line with its suction side connected toward said suction chamber of the injection pump, a second check valve in said aspiration line between said electric pump and said supply tank, with a compression side of said electric pump connected to one side of said second check valve with the opposite side of said second check valve connected downstream of said first check valve to said overflow line which leads back to the fuel tank, which electric fuel pump during aspiration operation with the control valve simultaneously located in the shutoff position (II) aspirates fuel from said suction chamber to stop said engine.

4,565,171
KNOCK CONTROLLER FOR AN INTERNAL COMBUSTION ENGINE

Noboru Sugiura, and Seiji Suda, both of Mito, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,870
Claims priority, application Japan, Jul. 5, 1982, 57-115379
Int. Cl.⁴ F02P *5/14*
U.S. Cl. 123—425 **9 Claims**



1. A knock controller for controlling the ignition timing for a multiple cylinder internal combustion engine, comprising: sensor means for sensing operating conditions of the engine, said sensor means including a single knock sensor for sensing knocking developed in the cylinders of the engine and providing an output indicative thereof; ignition means for generating an ignition pulse and for producing sparks for each of the cylinders of the engine; and electronic control means for pro-

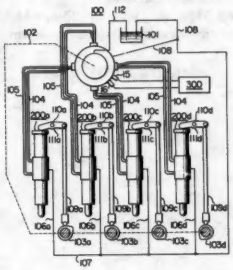
ducing an ignition timing control signal to said ignition means for controlling the ignition timing in accordance with the intensity of detected knocking, said electronic control means identifying each of the plural cylinders of the engine in accordance with the operation of the engine, detecting the intensity of knocking developed in each of the identified plural cylinders according to the output of said knock sensor and different predetermined knock detection levels for the respective cylinders and providing an output indicative thereof, and determining the ignition timing for each of the identified plural cylinders according to the output of the detected knocking intensity for the identified cylinder, whereby the different predetermined knock detection levels for the respective cylinders are predetermined in accordance with at least the mounting position of the single knock sensor with respect to the respective cylinders thereby enabling mounting of the single knock sensor at any position on the engine and ensuring appropriate detection of knocking in each of the cylinders.

4,565,172

HIGH-PRESSURE FUEL INJECTION SYSTEM FOR DIESEL ENGINE

Yoshikazu Hoshi, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,168
Claims priority, application Japan, Sep. 2, 1983, 58-160443
Int. Cl.[4] F02M *57/02*
U.S. Cl. 123—446 **3 Claims**



1. A high-pressure fuel injection system for a diesel engine comprising:

(a) a plurality of main pumps for injecting fuel each located at one of cylinders of the engine and formed with a fuel injecting port, each said main pump for injecting fuel being formed with a first injected fuel space filled with fuel to be injected, a discharge valve located in a path connecting said first injected fuel space with said fuel injecting port, said discharge valve being opened when the fuel to be injected reaches a predetermined pressure level, a first injection timing fuel space fluidly connected with said first injected fuel space through a movable shuttle and filled with injection timing fuel, and a plunger varying the volume of said first injection timing fuel space;

(b) a metering and distributing pump formed with injection fuel outputs and injection timing fuel outlets corresponding in number to the cylinders of the engine for discharging fuel in timed relation to the rotation of the engine, said metering and distributing pump being formed with a second injected fuel space filled with the fuel to be injected and brought into communication with said injected fuel outlets in timed relation to the rotation of the engine, and a second injection timing fuel space filled with injection timing fuel fluidly communicated with said second injected fuel space through a movable free piston and communicated with said injection timing fuel outlets in timed relation to the rotation of the engine and equipped with pump means for compressing the fuel in said second injection timing fuel space in timed relation to the rotation of the engine;

(c) a plurality of fuel metering valves for metering fuel flowing into said second injected fuel space and second injection timing fuel space respectively;

(d) a plurality of pipes for fluidly connecting said first injected fuel space and first injection timing fuel space of each said main pump for injecting fuel with said injected fuel outlets and injection timing fuel outlets of said metering and distributing pump respectively; and

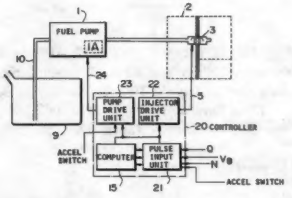
(e) a rocker arm mechanism for driving the plunger of each said main pump for injecting fuel in timed relation to the rotation of the engine.

4,565,173

METHOD AND SYSTEM FOR CONTROLLING FUEL TO BE SUPPLIED FROM FUEL PUMP TO ENGINE

Katsunori Oshiage, Yokosuka, and Akio Hosaka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 21, 1981, Ser. No. 333,011
Claims priority, application Japan, Dec. 26, 1980, 55-184107
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—458 **2 Claims**



1. A controller for controlling fuel supplied by a fuel pump driven by a fuel pump motor to a fuel injection valve of an engine, comprising:

(a) a plurality of sensors for detecting engine operating conditions and for generating sensor signals corresponding thereto;

(b) an input unit responsive to the sensor signals for providing digital output signals corresponding thereto;

(c) a microcomputer connected to said input unit for receiving said digital output signals, said microcomputer being operable to calculate a basic fuel injection time period during which said fuel injection valve injects fuel into the engine and a basic motor-drive duty cycle for driving the fuel pump motor to supply fuel from the fuel pump to the fuel injection valve in accordance with the digital output signals;

(d) an injector drive unit connected to said microcomputer for outputting a pulse signal to the fuel injection valve, said pulse signal having a pulse width corresponding to the basic fuel injection time period calculated by said microcomputer; and

(e) a pump drive unit connected to said microcomputer for outputting a pulse signal to said fuel pump motor having a duty cycle corresponding to the basic motor-drive duty cycle calculated by said microcomputer;

wherein said basic fuel injection time period and said basic motor drive duty cycle correspond such that the amount of fuel pumped from the fuel pump matches the amount of fuel injected by the injector; and

wherein said microcomputer generates clock pulses and said pump drive unit comprises:

(1) a first counter for counting the number of said clock pulses inputted thereto;

(2) a first register connected to said microcomputer for

storing a first data calculated by said microcomputer, said first data being representative of the period of said pulse signal from the pump drive unit;

(3) a first comparator for comparing the number of clock pulses counted by said first counter with the first data stored in said first register and for outputting a set signal when the counted number is equal to the first data stored in said first register;

(4) a second counter for counting the number of clock pulses inputted thereto;

(5) a second register connected to said microcomputer for storing the basic motor-drive duty cycle calculated by said microcomputer;

(6) a second comparator connected to said second counter and second register for comparing the number of clock pulses of said second counter with the basic motor-drive duty cycle stored in said second register and for outputting a reset signal when the counted number of clock pulses reaches the basic motor-drive duty cycle stored in said second register;

(7) a flip flop for outputting said pulse signal of said pump drive unit, the flip flop output being set to a first level when said first comparator outputs the set signal thereto and being reset to a second level when said second comparator outputs the reset signal thereto; and

(8) an AND circuit for outputting the clock pulses to said second counter only while the flip-flop output is at said first level.

4,565,174

FUEL INJECTION CONTROL APPARATUS

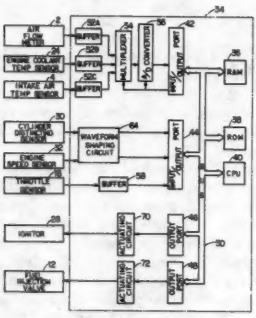
Makoto Suzuki, Mishima, and Kenichi Nomura, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Nov. 2, 1984, Ser. No. 667,746

Claims priority, application Japan, Dec. 26, 1983, 58-250331

Int. Cl.⁴ F02B *3/02*

U.S. Cl. 123—478 **4 Claims**



1. A fuel injection control apparatus for use of an engine, comprising:

a first means for detecting an amount of an intake air which is suctioned into the engine;

a second means for detecting an engine speed;

a third means for determining whether the detected engine speed is in a low engine speed zone whose speed is less than a first predetermined engine speed, whether the detected engine speed is in a high engine speed zone whose speed is greater than a second predetermined engine speed which is set to be greater than the first predetermined engine speed, or whether the detected engine speed is in an intermediate engine speed zone whose speed is between the first and second predetermined engine speeds;

a fourth means for setting a minimum amount of an injected fuel according to the engine speed zone determined by the third means, the fourth means setting a first value when the third means detects that the detected engine speed is in the low engine speed zone, and a second value whose value is less than the first value when the third means detects that the detected engine speed is in the high engine speed zone, further the fourth means maintaining the first value in the intermediate engine speed zone when the engine speed increases from the low engine speed zone and the second value in the intermediate engine speed zone when the engine speed drops from the high engine speed zone;

a fifth means for determining an amount of an injected fuel according to the amount of the intake air and the engine speed detected by the first and second means respectively, the fifth means determining the minimum amount of the injected fuel set by the fourth means as a final minimum amount of the injected fuel when the determined amount of the injected fuel is less than the minimum amount set by the fourth means, further the fifth means determining the determined amount of the injected fuel as a final amount of an injected fuel when the determined amount of the injected fuel is greater than the minimum amount set by the fourth means; and

a sixth means for injecting the amount of fuel calculated by the fifth means.

4,565,175

ENGINE COOLING SYSTEM

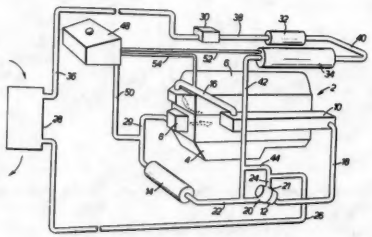
George C. Kaye, Broadstone, England, assignor to Sabre Engines Limited, Dorset, England

Filed May 18, 1984, Ser. No. 611,893

Claims priority, application United Kingdom, May 19, 1983, 8313907

Int. Cl.⁴ F00M *31/00*

U.S. Cl. 123—542 **2 Claims**



1. A cooling system for a diesel engine havng charge air cooling, said system comprising:

a first cooling circuit including the cylinder block of said engine;

a second cooling circuit including a charge air cooler;

each said circuit employing a common liquid coolant;

a single heat exchanger for cooling liquid coolant passed therethrough;

means for connecting said first circuit, said second circuit and said heat exchanger in series, with said second circuit downstream of said heat exchanger and upstream of said first circuit, said connecting means being temperature controlled in such manner that the two circuits operate independently until the temperature of the coolant in the first circuit reaches a given value; and

the connecting means including a temperature-responsive valve in the first circuit, which valve has an inlet and a first outlet connected the first circuit and a second outlet connected to the inlet of the heat exchanger and is arranged to deliver at least a part of the coolant of the first circuit to the heat exchanger when the given temperature is reached, the flow of the liquid coolant in the second circuit not passing through the temperature responsive

valve, and the temperature responsive valve being the only liquid coolant control valve positioned in the system for controlling flow between the first and second circuits

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4,565,176

DEVICE FOR CONTROLLING THE INTAKE AIR TEMPERATURE OF A MIXTURE-COMPRESSING INTERNAL COMBUSTION ENGINE

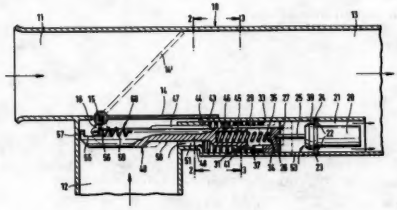
Herbert Alf, Ludwigsburg; Rudolf Leipelt, Oberstenfeld; Rolf Füsser, Ingersheim, and Helmut Spannbauer, Ludwigsburg-Ossweil, all of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Sep. 10, 1984, Ser. No. 648,935

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1983, 3332737; Mar. 9, 1984, 3408609

Int. Cl.⁴ F02M *31/00*

U.S. Cl. 123—556 **20 Claims**



1. In an air intake system supplying combustion air to an internal combustion engine which compresses and burns a mixture of fuel and combustion air obtained either by means of a carburetor or through the injection of fuel into the air intake system, in such a system, a device for controlling the intake air temperature comprising:

a raw air duct including a cold air intake duct with an inlet for raw air of ambient temperature, a transversely oriented warm air intake duct connected to a source of preheated raw air and joining the cold air intake duct in a duct junction, and a raw air mixing duct downstream of the duct junction;

a flow proportioning valve arranged in the area of the duct junction, the flow proportioning valve being movable between two end positions, in a first one of which said valve closes off the warm air intake duct while opening the cold air intake duct, and in the second one of which said valve closes off the cold air intake duct while opening the warm air intake duct, the valve being movable to intermediate positions in which both intake ducts are partially open for the admission to the raw air mixing duct of both cold raw air and preheated raw air, in proportions determined by the valve position;

a thermostat chamber defined by chamber walls which are solidary with the raw air duct, the thermostat chamber having a calibrated warm air branch inlet for the supply of a branch flow of preheated raw air from the warm air intake duct to the thermostat chamber, a calibrated cold air branch inlet for the supply of a branch flow of ambient raw air from the outside to the thermostat chamber, and an outlet through which said branch flows rejoin the flow of combustion air which is supplied to the internal combustion engine by the air intake system;

a wax thermostat arranged in the thermostat chamber downstream of the calibrated branch inlets for preheated raw air and ambient raw air and upstream of said outlet, the thermostat and the walls of the thermostat chamber forming a flow gap for the passage of said branch flows, the cross section of said flow gap being a fraction of the smallest flow cross section of the raw air mixing duct; and

drive means for connecting the wax thermostat to the flow proportioning valve in such a way that an expansion of the wax thermostat in response to an increase in its temperature produces a displacement of the flow proportioning valve in the direction of said first valve end position and a contraction of the wax thermostat in response to a decrease in its temperature produces a displacement of the flow proportioning valve in the direction of said second valve end position.

4,565,177

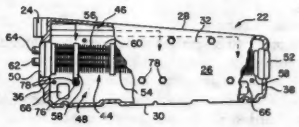
UNITIZED CROSS TIE AFTERCOOLER ASSEMBLY

Leslie A. Roettgen, Columbus, and Kenneth W. Israel, Hope, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 9, 1983, Ser. No. 530,651

Int. Cl.⁴ F02B *29/04*

U.S. Cl. 123—563 **4 Claims**



1. An aftercooler assembly for an internal combustion engine designed to receive compressed charge air at or below a predetermined upper pressure limit for exchange with a fluid coolant comprising:

(a) a housing defining an elongated chamber including:

(1) a wrapper fabricated from sheet material and being incapable of resisting said upper pressure limit of charge air pressure by itself, said wrapper including opposed spaced side-walls, and

(2) an end wall at each of opposite ends of said wrapper;

(b) an elogated aftercooler core means positioned in said chamber for causing the engine charge air to flow in heat exchange relationship with the fluid coolant; and

(c) a plurality of cross tie assemblies extending across the entire distance separating said first and second sidewalls and including spacer means of a length less than or equal to the width of the core means and

(d) a cross tie securing means extending entirely through said housing, said spacer means and securing means cooperating in a manner drawing said first and second sidewalls into compressive engagement with said core means to form a unitized assembly capable of withstanding the upper limit of charge air pressure.

4,565,178

SUPERCHARGER CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hidenobu Nagase, and Takayuki Hirayama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,832

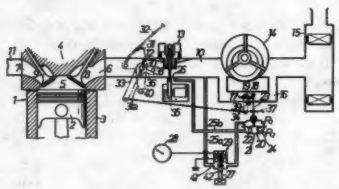
Claims priority, application Japan, Jan. 24, 1983, 58-9643

Int. Cl.⁴ F02B *37/12*

U.S. Cl. 123—564 **6 Claims**

1. The supercharger control system for an internal combustion engine having a throttle valve with a throttle operating lever, an engine air inlet passage, a venturi-type carburetor, comprising, a supercharger located in the engine air inlet passage upstream of the throttle valve, said supercharger being driven by the engine, a bypass within the engine inlet passage around said supercharger, a control valve with a control lever attached thereto located within said bypass to control air flow therethrough, a diaphragm device, a first side of said diaphragm device being in communication with the engine inlet passage at the exit of said supercharger, a second side of said diaphragm being in communication with the venturi carbure-

tor, a valve control linkage being constructed and arranged to open said control valve with increased vacuum in said first side of said diaphragm, spring means biasing said diaphragm to open said control valve, an activation lever with a stopper protrustion therefrom, said activation lever being pivotally mounted about the throttle valve, a first stop pin in the intake passage wall, a second stop pin on the throttle operating lever to selectively engage said activation lever, a regulation lever



pivotally mounted about said control valve, a third stop pin on said control lever to selectively engage said regulating lever, an activation linkage connecting said activation lever and said regulating lever so as to create reciprocating motion therebetween, and spring means biasing both said regulating lever against said third stop pin when said control valve is in the fully open position and said stopper protrusion against said first stop pin.

4,565,179

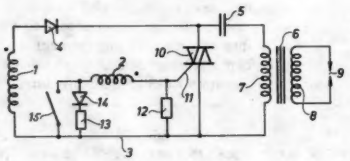
APPARATUS IN MAGNETO IGNITION SYSTEMS FOR PROVIDING TIME-SEPARATED SEQUENCES FOR CHARGING AND TRIGGERING IN CO-PHASED CHARGING AND TRIGGERING VOLTAGE SEQUENCES, INCLUDING INHIBITION OF THE IGNITION SEQUENCE IN SUCH APPARATUS

Jan G. Nytomt; Lars-Olof Ottosson, and Nils A. Agren, all of Åmål, Switzerland, assignors to Aktiebolaget Svenska Elektromagneter, Åmål, Sweden

Filed Jul. 7, 1983, Ser. No. 511,642

Int. Cl.[4] F02P *3/06*

U.S. Cl. 123—599 **2 Claims**



1. In a flywheel magneto system, the combination comprising:

(a) a charging circuit connected through a storage capacitor to an ignition transformer;

(b) a triac connected across said capacitor for discharging it through said transformer, and having a control terminal;

(c) a control circuit co-phased with said charging circuit and having a rectifier connected to said control terminal, the polarity of said rectifier being such that said rectifier comprises a means for enabling a voltage build-up in said control circuit after the charging interval for said storage capacitor to trigger said triac;

(d) a selectively open or closed short-circuiting switch connected across said rectifier in said control circuit, whereby said closed short-circuiting switch provides a control voltage on said control terminal of said triac to put it in an on-state during the initial portion of the capacitor charging interval to terminate charging before ignition triggering voltage is reached, thus terminating ignition;

(e) each of said charging and control circuits having an induction winding;

(f) a common conductor connected to (1) one pole of said triac, (2) the primary winding of said ignition transformer, (3) the cathode of said rectifier, (4) said charging induction winding, and (5) one side of said short-circuiting switch;

(g) said control induction winding connecting said control terminal of said triac to the anode of said rectifier; and

(h) the other side of said short-circuiting switch being connected to the connection of the anode of said rectifier to said control induction winding.

4,565,180

CONTACTLESS IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

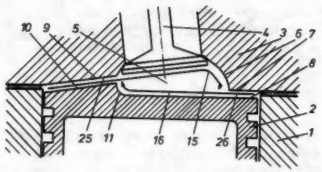
Masao Iwata, Yokosuka, Japan, assignor to Oppama Kogyo Kabushiki Kaisha, Yokosuka, Japan

Filed Apr. 5, 1984, Ser. No. 597,173

Claims priority, application Japan, May 17, 1983, 58-73333[U]

Int. Cl.[4] F02P *5/08*

U.S. Cl. 123—602 **3 Claims**



1. A contactless ignition device for internal combustion engines comprising an exciter coil and pulser coil each inducing a voltage by rotation of an internal combustion engine, a first condenser charged with the positive induced voltage of said exciter coil, a second condenser charged with the negative induced voltage of said exciter coil, an ignition coil receiving the discharged voltage of said first condenser and feeding a higher voltage to a spark plug, an full wave rectifier having its input connected to said pulser coil through a Zener diode for determining the number of angle advancing revolutions of the engine, a first switching element made conductive by receiving the output voltage of said full wave rectifier and enabling the discharge of said second condenser and a second switching element made conductive by receiving the discharged voltage of said second condenser and enabling the discharge of said first condenser.

4,565,181

INTERNAL COMBUSTION ENGINE WITH ONE OR MORE COMPRESSION CAPS BETWEEN PISTON AND CYLINDER HEAD AND DEFLECTION MEANS IN THE COMBUSTION CHAMBER THROUGH WHICH ROTARY FLOW IS INDUCED IN THE CHARGE

Paul August, C/ Capellades 1, Barcelona 6, Spain (6)

Continuation of Ser. No. 855,690, Nov. 29, 1977, abandoned. This application Jan. 10, 1980, Ser. No. 110,935

Int. Cl.[4] F02B *23/00*

U.S. Cl. 123—601 **4 Claims**

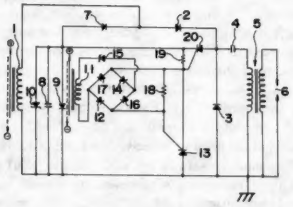
1. An internal combustion engine cylinder construction for providing a vertically oriented rotational swirl of a gas fuel charge in a combustion chamber immediately before ignition thereof, comprising:

(a) an engine cylinder having a reciprocable piston disposed therein and closed at its upper end by a cylinder head having side-by-side intake and exhaust valves,

(b) a recessed, oval-shaped combustion cavity disposed between the head of the engine and the top of the piston, and having a flat upper surface including the intake and exhaust valve surfaces and the area between them, and a flat opposing bottom surface on the top of the piston defined by a left and right sidewall and having substantially semicircular ends aligned with the outer circular periphery of the valves and connected by opposite sidewalls,

(c) two opposed compression gap zones disposed between the head and the upper surface of the piston, one compression zone disposed on each side of the combustion cavity and adjacent one of said left and right sidewalls and connecting with the interior of the combustion cavity when the piston at the upper end of its travel approaches the cylinder head so as to force the charge into the combustion chamber in opposite opposed directions immediately prior to the piston reaching the top of the cylinder,

(d) the piston having a first upwardly extending ridge which forms one of said left and right sidewalls of the combustion chamber, and the head having a second corresponding downwardly extending ridge forming the other of said left and right sidewalls,



(e) one compression gap zone opening into the combustion chamber adjacent and in line with the piston surface, and which acts to force the incoming charge around the second downwardly extending ridge on the head and across the flat bottom surface on the piston in a stream to the opposed first upwardly extending ridge on the piston which is on the opposite side of the combustion chamber, where it is deflected upwardly along that first ridge away from the piston surface,

(f) the other compression gap zone opening into the combustion chamber adjacent and in line with the closed valve surfaces and which acts to force the incoming charge around the first upwardly extending ridge on the piston and across the valve surfaces to the second downwardly extending ridge on the head which is on the opposite side of the combustion chamber, where it is deflected downwardly along that second ridge and away from the valve surfaces, and

(g) the opposed flows from the compression gap zones flowing clear of each other over their adjacent flat surfaces thereby imparting an overall rotational swirl of the charge in the combustion chamber as the piston approaches the top of the cylinder.

4,565,182

CROSSBOW WITH ROTATABLE MAGAZINE HAVING OPEN-SIDED CHANNELS

Bernard T. Barnett, Ryton, Nr. Shifnal, England, assignor to B & P Barnett Limited, West Midlands, England

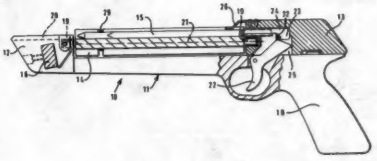
Filed Aug. 12, 1983, Ser. No. 522,584

Claims priority, application United Kingdom, Dec. 21, 1982, 8236256

Int. Cl.⁴ F41B 5/00

U.S. Cl. 124—25 **1 Claim**

1. In a crossbow comprising an elongated stock with a fore-end portion and a rear-end portion and a prod mounted on and extending outwardly from the fore-end portion of the stock, a magazine for holding a plurality of bolts mounted on the stock between the rear-end portion and the fore-end portion, wherein the improvement comprises said magazine being movable relative to the stock abut an axis of rotation parallel to the longitudinal extent of the stock for presenting the bolts in succession to a firing position on the stock, wherein the magazine comprises arms which extend away from the axis and along the length of the magazine, wherein the magazine defines a plurality of open-sided channels for receiving respective bolts, which channels are spaced apart about the axis of rotation and each of which channels is defined between a respective pair of said arms, and wherein the magazine comprises holding means operative while in a holding position for releasably holding a bolt in a respective one of said channels.



4,565,183

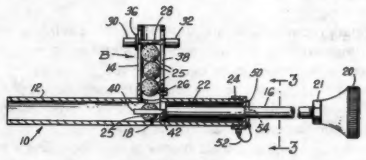
SPRING TYPE BALL PROJECTING DEVICE

Samuel C. Smith, 210 Hartman Road, Newton Centre, Mass. 02159

Filed Sep. 29, 1982, Ser. No. 428,250

Int. Cl.⁴ F41B 7/00

U.S. Cl. 124—26 **8 Claims**



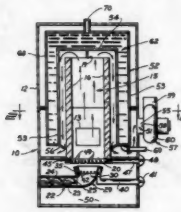
1. A quick-release transportable pocket-sized, rapid fire nonlethal projectile launcher comprising a firing cylinder for receiving and launching projectiles and a spring-actuated plunger moving slidably within the cylinder, an enlarged diameter or shoulder at an end of the plunger to counter the force of a compression spring, spring leaf finger means at opposing sides of the shoulder of the plunger embracingly positioned for restricting movement of a projectile nested in the cylinder, orthogonal to and interconnected with the cylinder, a magazine means for storing spare projectiles until ready to be transferred to the firing cylinder between the firing cylinder and the magazine, a spring loaded adjustable ball retainer means at the base of the magazine, to control the release of stored projectiles, for reversible manual or gravity feed, moving slidably within a slot in the magazine, a protruding rod feeder means to release projectiles by forcing the stored projectiles past the plunger one-at-a-time, a gravity-release pin cocking means, attached by a chain to the cylinder, to retain the plunger in a withdrawn position and place the projectile launcher in readiness for launching a projectile, which pin falls out upon pulling back the plunger, and a clip means for fastening the projectile launcher in a pocket of clothing of the user.

4,565,184

COMBUSTIBLE PARTICULATE FUEL HEATER

Bruce H. Collins, 11426 Gravelly Lake Dr., Tacoma, Wash. 98499, and Heinrich J. W. Jurgens, 30919 Meridian East, Graham, Wash. 98338

Filed May 17, 1984, Ser. No. 611,349
Int. Cl.[4] F24B 9/00; F24H 9/18; F23K 3/14
U.S. Cl. 126—368 13 Claims



1. A combustible particulate fired heater, comprising:

a combustion chamber defined by upright side walls extending between open top and bottom ends;

an enclosure surrounding the combustion chamber;

a retort within the combustion chamber adjacent the bottom end thereof and having a lower particulate receiving end and an upper open end;

feed conveyor means leading through the enclosure to the retort for delivering metered quantities of combustible particulates to the lower particulate receiving end of the retort;

primary combustion air supply means having a primary combustion air supply manifold extending at least partially about the upper open end of the retort;

primary air control means on the primary air supply means for selectively allowing entry of combustion air from outside the enclosure into the retort;

secondary combustion air supply means including a secondary air supply manifold within the combustion chamber above the primary combustion air supply manifold;

secondary air control means independent of the primary air control means for selectively allowing entry of secondary air from outside the enclosure to an area within the combustion chamber above the retort;

an exhaust duct opening into the enclosure; and

vacuum means connected to the exhaust duct for producing a pressure differential between the area confined by the enclosure and the ambient atmosphere such that ambient air is drawn through at least one of the combustion air supply means to induce a high level of gasification and to support combustion at the retort and for drawing combustion exhaust gases out through the exhaust duct;

wherein the primary combustion air supply manifold is integral with the retort at the upper end thereof;

wherein the primary air supply manifold extends about the periphery of the upper open end of the retort and includes a primary air discharge opening formed therein facing inwardly across the upper retort end; and

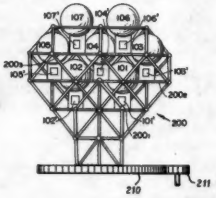
wherein the primary air supply manifold includes spaced horizontal top and bottom peripheral edges and wherein the primary air discharge opening is situated toward the bottom peripheral edge.

4,565,185

FOUNDATION FOR MOUNTING SOLAR RAY COLLECTING DEVICES

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,712
Claims priority, application Japan, Aug. 3, 1983, 58-142052
Int. Cl.[4] F24J 3/02
U.S. Cl. 126—417 3 Claims



1. A support foundation comprising a support structure means operable to move to follow the sun, said support structure means having structural step parts forming a plurality of steps disposed at different elevations, said support structure further comprising an underlying structure supporting said structural step parts, said underlying structure being generally centrally disposed relative to said structural step parts so as to provide a generally balanced load on said underlying structure, each of said steps having at least one base, a solar ray collector mounted on each of said bases, each of said solar ray collectors having a light-receiving surface, each of said base having an equilateral polygonal configuration, said bases in adjacent steps being vertically spaced from one another at a distance at least as great as the vertical height of said light-receiving surface so as to preclude having the shadow of a solar ray collector projecting on a rearwardly disposed solar ray collector, said bases on said one step being horizontally positioned between the bases on the next higher step so as to provide for alternately staggered solar ray collectors on successive steps, said light-receiving surface comprising a lens, said solar ray collector further comprising an optical conductor cable having a light-receiving edge, each of said solar ray collectors having an access door facing to the rear away from the sun to provide access for positioning said light-receiving edge of said optical conductor cable at the focus of said lens, said structural step parts extending from said base so as to free the rearwardly facing area of said base to provide for access to said door to thereby permit adjustment of said solar ray collector from the rear of the support structure away from the sun as said solar ray collector continues to unobstructedly receive solar rays from the sun.

4,565,186

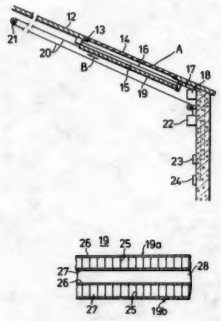
PASSIVE-TYPE SOLAR DEVICE

Junzo Takata; Michio Jinushi, and Mitsuo Hashizume, all of Kanagawa, Japan, assignors to Takenaka Komuten Co., Ltd., Osaka and Nankoso Ltd., Kanagawa, both of, Japan

Filed Oct. 3, 1984, Ser. No. 657,362
Claims priority, application Japan, Oct. 4, 1983, 58-185621; Oct. 4, 1983, 58-153875
Int. Cl.[4] E04D 13/18
U.S. Cl. 126—428 12 Claims

1. A passive-type solar device comprising a heat transmissible transparent plate disposed for exposure to sunlight, a reflecting film curtain presented spacedly beneath said plate and being substantially coextensive therewith, means for effecting disposition of said reflecting film curtain between aligned or transparent plate-closing position and withdrawn or transparent plate-open condition, a light transmissible, heat-insulating board provided spacedly beneath and in alignment with said transparent plate wherein said heat-insulating board comprises

at least two honeycomb material sections of predetermined thickness, transparent plates sandwiching each honeycomb material section, said sections being spaced-apart for creating an air layer of predetermined thickness, and means integrating



said sections together with the intervening air layer into a unitary board, and means for effecting movement of said board between alignment with said transparent plate and withdrawn or non-transparent plate aligned condition.

4,565,187

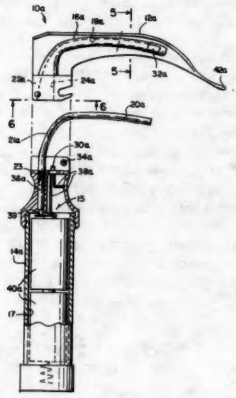
LARYNGOSCOPE

David J. Soloway, 22 Alice Ave., Merrick, N.Y. 11566

Filed Sep. 4, 1984, Ser. No. 647,242

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—11 **13 Claims**



1. A laryngoscope which comprises:

(a) a handle having a hook-on fitting and a hollow chamber therein;

(b) means for illuminating carried within said hollow chamber of said handle;

(c) a flexible light emitting tube affixed to said handle adjacent said hook-on fitting; and

(d) a plastic disposable blade having a hook-on fitting and a hollow sleeve, said blade is removably attached to said handle with said light emitting tube entering said hollow sleeve so that a larynx can be illuminated and said blade will obviate dental trauma.

4,565,188

VIBRATORY SAUNA

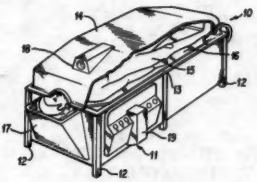
Laurie S. Hardie, 8 View Ave., Surfers Paradise, Queensland, Australia, assignor to Laurie Stanley Hardie, Surfers Paradise and Leonard John Coleman, Paradise Waters, both of, Australia

Filed Nov. 15, 1983, Ser. No. 551,958

Claims priority, application Australia, Nov. 23, 1982, PF6935

Int. Cl.[4] A61A *21/00*

U.S. Cl. 128—24.2 **15 Claims**



1. A vibratory sauna comprising:

a housing having a closure member associated therewith and comprising a base and continuous side wall;

a support member oriented in a substantially horizontal plane for supporting a patient in a supine position;

head support means located adjacent the housing and outwardly of said closure member to form a longitudinal extension of the support member;

resilient mounting means for supporting said support member;

vibration means for vibrating said support member;

a member in said housing located below said support member and containing heating means and airflow generation means, and said chamber further comprising a plurality of chambers, means in said chamber for providing longitudinal flow of heated air in a continuous loop manner, whereby heated air may be caused to flow in and out of said chamber at opposite ends thereof, and to flow above said support member to contact a person lying thereon while said support member is adapted to be simultaneously vibrated; and said heated air being returned to said chamber to form a closed circulation loop of heated air throughout said housing.

4,565,189

BEAUTY TREATMENT DEVICE

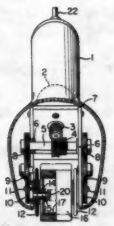
Kenichi Mabuchi, Matsudo, Japan, assignor to Bio Mabuchi Co. Ltd., Japan

Filed Sep. 24, 1982, Ser. No. 423,157

Claims priority, application Japan, Oct. 8, 1981, 56-160653

Int. Cl.[4] A61H *7/00*

U.S. Cl. 128—49 **10 Claims**



1. A beauty treatment device, comprising a device body, a drive unit in said body, a roller support rotatably mounted in said body about a support axis, a patter having a shaft rotatably mounted on said roller support about a shaft axis, said shaft axis being offset from said support axis so that said shaft is eccentri-

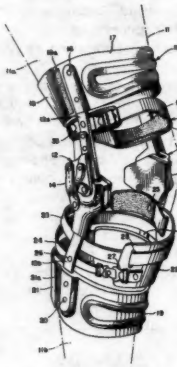
cally mounted on said roller support for eccentric rotation relative to said roller support, said patter having an outer periphery with a diameter which is driven through an eccentric path, a bearing rotatably mounted in said device body for rotation about said support axis, means connecting said drive unit to said roller support for rotating said roller support, and a spacer wheel rotatably mounted on said bearing and being of a diameter at most smaller than the diameter of said outer periphery of said patter so as to engage against the skin and position the device so that rotation of said patter causes said patter to pat the skin.

4,565,190

KNEE ORTHOSIS WITH SWIVEL-ACTION SUPRACONDULAR CUFF

Robert E. Pirmantgen; John S. Adamski, and Mark F. Devens, all of Chicago, Ill., assignors to Northwestern University, Evanston, Ill.

Filed Jul. 13, 1984, Ser. No. 630,649
Int. Cl.[4] A61F *3/00*
U.S. Cl. 128—80 C **11 Claims**



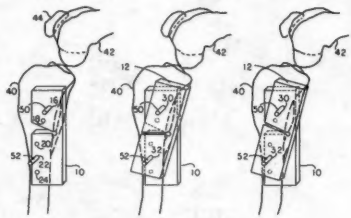
1. A knee orthosis comprising a pair of hinge assemblies adapted to be disposed on opposite sides of a wearer's knee; each hinge assembly including an upper sidebar adapted to extend upwardly alongside the wearer's upper leg and a lower sidebar adapted to extend downwardly alongside the wearer's lower leg; said hinge assembly having constantly changing instantaneous axes of rotation as said upper and lower sidebars are moved between extension and flexion; lower suspension means for securing said lower sidebars along opposite sides of a wearer's lower leg; and upper suspension means for securing said upper sidebars along opposite sides of a wearer's upper leg; said upper suspension means comprising (a) a proximal cuff connected to the proximal ends of said upper sidebars and adapted to extend about a wearer's thigh and (b) a supracondular femoral cuff connected to said upper sidebars distal to said proximal cuff; said supracondular femoral cuff including a flexible, semi-rigid member of generally U-shaped configuration having a pair of arm portions adapted to engage the anterior and posterior surfaces of the upper leg just above the knee and an integral intermediate portion disposed between said arm portions; means connecting said intermediate portion to one of said sidebars for limited universal pivotal movement in relation thereto; and flexible strap means joining the ends of said arm portions to the other of said upper sidebars.

4,565,191

APPARATUS AND METHOD FOR PERFORMING CUNEIFORM OSTEOTOMY

D. Barclay Slocum, 241 Spy Glass Dr., Eugene, Oreg. 97401

Filed Jan. 12, 1984, Ser. No. 570,458
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 H **13 Claims**



1. An apparatus for performing cuneiform osteotomy comprising:

a jig having first and second faces which terminate in edges and which define a recess extending therethrough and intersecting an edge thereof, said jig further defining a pair of jig bores extending therethrough in a direction substantially perpendicular to said first jig face, one of each of said jig bores being disposed to each side of said recess, said jig bores each being adapted to properly position a drill bit extending therethrough and into the bone against which said second jig face is to be disposed and to which the osteotomy is being performed; and

an osteotomy guide having first and second substantially parallel faces which complement said first jig face and which terminate in edges, said guide defining a pair of guide bores extending therethrough in a direction substantially perpendicular to said guide faces, said guide bores being spaced from each other a distance equal to the spacing of said jig bores so that each of said guide bores is adapted to receive one of the drill bits to permit relative alignment of said jig and said guide with respect to each other and to the bone, said guide further defining a slot extending therethrough across less than the entire width of said guide and intersecting an edge thereof, said slot extending at an oblique angle with respect to a line drawn between said guide bores, whereby said guide may be mounted to said jig with either of said guide faces disposed against said first jig face permitting said guide slot to be disposed in a first and then a second angular position with respect to the bone to facilitate cutting the bone in first and second cuts to cut a bone wedge of an angle alpha which is equal to the difference between said first and second angular positions of said slot.

4,565,192

DEVICE FOR CUTTING A PATELLA AND METHOD THEREFOR

James A. Shapiro, 1460 N. Sandburg Ter., Chicago, Ill. 60610

Filed Apr. 12, 1984, Ser. No. 599,640
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 H **27 Claims**

1. A device for attachment to an everted patella for providing a horizontally level cutting surface for an oscillating saw used to cut off cartilage of the articular surface of the patella and a layer of bone of desired thickness for subsequent insertion into the patella of a prosthesis, said device comprising:

a first attaching means for removable attachment to a portion of a patella;

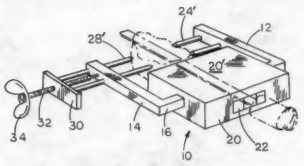
a first leg extension having a first end mounting said first attaching means, and a second end remote from said first end;

a second attaching means for removable attachment to an-

other portion of a patella different from that portion to which the first attaching means is attached;

a second leg extension having a first end mounting said second attaching means and a second end remote from said first end; said first and second attaching means being mounted to their respective leg extensions such that they are spaced from each other to define therebetween a space in which is received a patella for attachment to said first and second attaching means;

a cutting support surface means fixedly connected to said second ends of said first and second leg extensions to thereby space said cutting support surface means from said first ends of said leg extensions and, therefore, to space said cutting support surface means from said first and second attaching means, said cutting support surface means defining a guide surface upon which is supportable an oscillating saw used to cut a patella in a cutting plane parallel to said cutting support surface means;



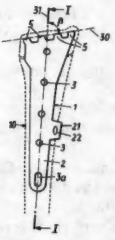
and a placement aid means mountable over said cutting support surface means for allowing the attachment of said first and second attaching means to a patella a desired distance below the articular surface of the patella, said placement aid means having an projecting positioning surface portion that at one end thereof is supportable by the articular surface of the everted patella, and means connected to the other end of said projecting surface portion for spacing said projecting surface portion from said cutting support surface means, whereby after attachment of said first and second attaching means to the everted patella after the distance from the articular surface thereto has been determined by said placement aid means, said placement aid means is removed to expose a cutting surface for an oscillating saw which cutting surface is positioned below the articular surface a desired distance to cut off the desired amount of cartilage and bone.

4,565,193

PRONGED PLATE FOR RESETTING FRACTURED BONES

Elke Streli, Stelzhamerstrasse 2, A-4020 Linz, Austria

Filed Sep. 12, 1983, Ser. No. 531,905
Claims priority, application Austria, Sep. 13, 1982, 3413/82
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—92 D **13 Claims**



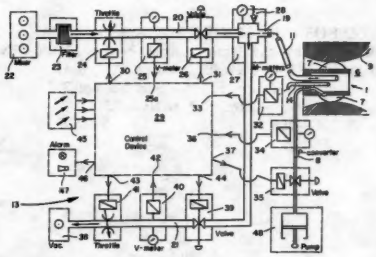
1. A pronged article for fixing bone parts in position together at a bone fracture in the region of an articulation, comprising an elongated plate having a longitudinal axis and adapted to lie along one of said bone parts, said plate being transverse to a longitudinal plane including said axis and having a plurality of prongs projecting transversely from one end of the plate, said plate having a plurality of apertures formed therein for receiving plate fixating means for securing said plate to said one of said bone parts, said plate being characterised by the improvement wherein the axes of said prongs, when extended to intersect said longitudinal plane, each include angles of between 10° and 30° with said longitudinal plane.

4,565,194

TRACHEAL TUBE FOR ARTIFICIAL RESPIRATION

Hilko Weerda, Bad Krozingen; Gerhard Meuret, and Peter Pedersen, both of Freiburg, all of Fed. Rep. of Germany, assignors to Dragerwerk AG, Fed. Rep. of Germany

Filed Oct. 3, 1983, Ser. No. 538,416
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204110
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—204.23 **13 Claims**



1. A respirator for giving artificial respiration to a patient, particularly in endolaryngeal surgery, comprising a tracheal tube having an open distal end and a closed proximal end, a balloon cuff surrounding the tracheal tube adjacent its distal end which is to be introduced, to an inflating cannula connected to said cuff, and a respiration tube extending into said tracheal tube through its proximal end and which terminates in the tracheal tube adjacent the distal end for injection ventilation, said distal end being sealed about said respiration tube, a pressure measuring cannula (14) extending into the interior (5) of the tracheal tube (2), said tracheal tube being sealed about said pressure measuring cannula, and a control device connected to said respiration tube and said pressure measuring cannula and including means for producing an excess pressure during the inspiration phase and an underpressure during the expiration phase in said respiration tube of said tracheal tube, when fixed in said trachea, in response to intratracheal pressure being measurable through the pressure measuring cannula and evaluatable for purposes of controlling the respirator.

4,565,195

GLOVE

Joel H. Eisenberg, 53A Blackhawk La., Stratford, Conn. 06497

Continuation of Ser. No. 219,481, Dec. 23, 1980, Pat. No. 4,445,507. This application Apr. 27, 1984, Ser. No. 604,506
Int. Cl.[4] A61F *13/00*; A41D *19/00*
U.S. Cl. 128—133 **8 Claims**

1. A glove for preventing injury to the thumb's ulnar collateral ligament comprising:

a hand covering having a thumb portion,

said thumb portion having a retaining means disposed at least in part on the radial side of said thumb portion,

said retaining means comprising a ribbon,

said ribbon being generally inelastic in the radial direction, and when the wearer's thumb is in place in said

thumb portion of said glove, said ribbon is disposed to extend over the thumb's metacarpal phalangeal joint so as to generally immobilize the adjacent bones with

respect to the joint in the radial direction whereby radial movement of the thumb which might injure the ulnar collateral ligament of the thumb is prevented.

4,565,196

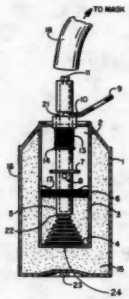
DISPOSABLE SMOKE MASK AND APPARATUS

Phillip J. Melby, and James J. Koch, both of Mason City, Iowa, assignors to Melco Co Inc., Mason City, Iowa

Filed Nov. 5, 1984, Ser. No. 668,387

Int. Cl.[4] A62B *9/02*

U.S. Cl. 128—205.24 **1 Claim**



1. Disposable smoke mask and apparatus comprising a smoke mask and canister of breathable gas wherein the improvement comprises:

a. a canister of breathable gas including an inner chamber;

b. plunger unit tube mounted in said canister;

c. said plunger unit tube held in position to seal said breathable gas in said canister, by means of a compressed spring and a snap ring fitting in a groove in said plunger unit tube;

d. seal ring rigidly fastened in a gas tight manner on said plunger unit tube;

e. lock ring fastened in a gas tight manner to said canister inner chamber, and wherein the inside diameter of said ring is sloped downward;

f. locking collar fastened in a gas tight manner to said plunger unit tube;

g. an aperture leading from said inner chamber;

h. an aperture in plunger unit tube located between said seal ring and said locking collar;

i. an aperture in top of plunger unit tube;

j. a hose end connected to said aperture in top of said plunger unit tube;

k. opposite end of said hose connected to said face mask;

l. said face mask including an elastic band.

4,565,197

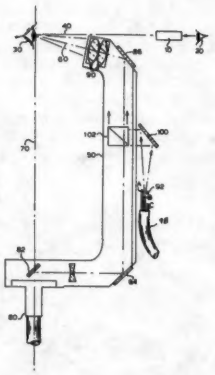
LASER OPHTHALMIC SURGICAL SYSTEM

Richard T. Daly, Huntington, N.Y., assignor to Lasers For Medicine, Del.

Filed Nov. 22, 1983, Ser. No. 554,478

Int. Cl.[4] A61F *5/06;* **G02B** *27/00;* **A61B** *17/36;* **A61N** *5/06*

U.S. Cl. 128—303.1 **10 Claims**



1. A method of providing an aiming beam into an eye for focusing a laser on a tissue of the eye comprising focusing onto eye tissue a plurality of images which are longitudinally spaced and parallel to an axis of projection whereby as the focal plane of the aiming beam moves along said axis each image becomes sharply visible when said image becomes substantially coplanar with said tissue.

2. An apparatus for performing microsurgery in an eye comprising:

means for viewing the interior of the eye along a first axis;

means for focusing a laser beam along a second axis into the eye to perform microsurgery; and

means for projecting a slit image with a fiducial feature into the eye along a third axis; and,

means for focusing an aiming beam into said eye, said aiming beam comprising several images projected in parallel along said second axis each image having a longitudinally displaced focal plane relative to the fiducial feature of the slit image.

4,565,198

METHOD FOR ALTERING THE CURVATURE OF THE CORNEA

Erich A. Koeniger, Metairie, La., assignor to Barnes-Hind, Inc., Sunnyvale, Calif.

Filed Dec. 27, 1983, Ser. No. 566,105

Int. Cl.[4] A61F *17/32;* **A61B** *17/32*

U.S. Cl. 128—305 **2 Claims**

1. A method for altering the radius of curvature of a cornea comprising the steps of

a, measuring the corneal curvature with a keratometer;

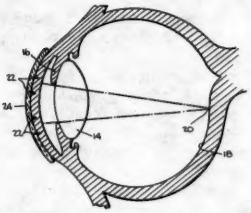
b, calculating the correction factor necessary to obtain proper focusing;

c, making sufficient incisions into the cornea to allow reduction of its curvature as determined by the correction factor calculated in step b;

d, placing a rigid gas permeable contact lens, having a radius of curvature, on the eye, said radius having been determined by using the correction factor calculated in step b;

e, applying light pressure on the contact lens by bandaging

technique or surgical suturing so that the cornea will conform to the shape of the lens;



f, allowing the cornea to heal under the applied pressure; and

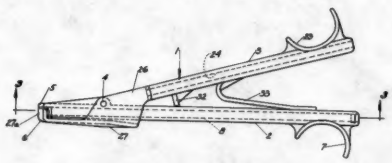
g, after healing, removing the contact lens from the eye.

4,565,199

LIGATOR

Carl T. Becht, Cincinnati, Ohio, assignor to Senmed, Inc., Cincinnati, Ohio

Filed Apr. 22, 1980, Ser. No. 142,675
Int. Cl.⁴ A61B *17/12*
U.S. Cl. 128—325 **8 Claims**



1. A surgical ligator to locate and clamp a substantially inverted U-shaped clip about a tubular body member to close off the tubular member, said ligator comprising first and second handle elements pivoted together in pliers-like fashion and terminating at their forward ends in clamping jaw portions, said first and second handle elements and their clamping jaw portions being pivotable between a normal open position and a closed clip-clamping position, means in association with said handle elements to bias said handle elements and their clamping jaw portions to said normal open position, said first handle elements having a longitudinal cavity formed therein comprising a magazine for a row of clips arranged in edge-to-edge relationship, said row of clips being located within said magazine and extending longitudinally of said first handle element, said clamping jaw portion of at least one of said handle elements having a locator stop for the forwardmost clip of said row to properly position said forwardmost clip for use, and means in said magazine independent of tool actuation energy to constantly urge and advance said row of clips to position said forwardmost clip of said row against said locator stop.

4,565,200

UNIVERSAL LESION AND RECORDING ELECTRODE SYSTEM

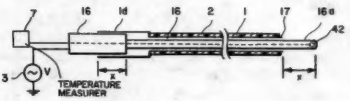
Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Continuation of Ser. No. 190,300, Sep. 24, 1980, abandoned. This application May 4, 1982, Ser. No. 374,806
Int. Cl.⁴ A61B *17/39*
U.S. Cl. 128—642 **4 Claims**

1. A universal radio frequency heat lesion electrode kit adapted to provide a surgeon with the ability to vary the dimensions and the orientation of heat lesions made within the body with only a single entrance tract into the body, said kit comprising:

(a) an entrance cannula having a hub on its proximal end and a straight elongated shaft that is adapted to be inserted into the living body such that the distal end of said cannula shaft which is the distal end of said cannula can be brought into proximity to target tissue within the living body which is to be destroyed by a heat lesion, said entrance cannula having a through-opening which extends from said proximal end to the distal end of said cannula shaft, the through-opening having a portion which is a straight through-opening such that a straight shaft may be passed completely through it and emerge from said distal end, and said cannula shaft being covered with an insulating material such that at most only a small portion of its surface at said distal end of said shaft is uninsulated;

(b) a straight lesion electrode which is adapted to be inserted into said entrance cannula, the straight lesion electrode having a hub on its proximal end and a straight elongated shaft that is adapted to be inserted through the through-opening of said entrance cannula so that the straight distal tip of said straight lesion electrode can emerge from the through-opening at said distal end of said entrance cannula, at least a portion of the surface of said straight distal tip being metal and uninsulated, said straight metal distal tip being electrically connected to connection means on said hub of said straight lesion electrode, whereby an external source of radio frequency voltage may be connected to the connection means so as to raise said straight metal distal tip to a radio frequency voltage, said straight lesion electrode and said entrance cannula being so adapted that when said straight lesion electrode is inserted into said through-opening of said entrance cannula then said straight distal tip will extend beyond said distal end of said entrance cannula in a straight direction which is parallel to the direction of said cannula shaft, and the



amount of said exposed metal surface of said straight distal tip beyond said distal end of said cannula can be varied in accordance with the relative positions of said straight electrode hub and said cannula hub;

(c) an off-axis lesion electrode which is adapted to be inserted into said through-opening of said entrance cannula, the off-axis lesion electrode having a hub on its proximal end and an elongated shaft portion that is adapted to be inserted through said through-opening of said entrance cannula so that the distal tip portion of said off-axis lesion electrode can emerge from said through-opening at the distal end of said entrance cannula, the distal tip of said off-axis lesion electrode being so adapted that when it emerges from said through-opening at said cannula distal end then it can emerge beyond said cannula distal end in a direction which is off the axis of said cannula shaft, at least a portion of the surface of said distal tip of said off-axis lesion electrode being metal and uninsulated, the metal portion of said off-axis lesion electrode tip being electrically connected to connection means on said hub of said off-axis lesion electrode, whereby an external source of radio frequency voltage may be connected to the off-axis electrode connection means so as to raise said metal portion of said off-axis lesion electrode tip to a radio frequency voltage, said off-axis lesion electrode and said entrance cannula being so adapted that when said off-axis lesion electrode is inserted into said through-opening of said entrance cannula then said distal tip of said off-axis lesion electrode will extend out of said through-opening in the distal end of said entrance cannula in a direction which is off the axis of said cannula shaft, and the direction of and the degree of extension of said metal uninsulated portion

of said distal tip of said off-axis lesion electrode relative to said distal end of said entrance cannula can be varied in accordance with the relative orientations and positions of said off-axis electrode hub and said cannula hub; and, said off-axis lesion electrode having thermal sensing means for monitoring the temperature of said metal uninsulated portion of said distal tip whereby, when in use, said entrance cannula can be inserted into the living body such that said distal end of said entrance cannula is in proximity to tissue which is to be destroyed by radio frequency heating, and, without any subsequent withdrawal or relocation of said entrance cannula, there are provided the surgical options of:

(1) making an axially symmetric heating of tissue located adjacent to said through-opening in said distal end of said cannula by inserting said straight lesion electrode into said cannula so as to have said straight distal tip extend beyond said cannula distal end into the tissue to be heated and applying said radio frequency voltage to said metal portion of said straight distal tip, thereby causing tissue adjacent to said straight distal tip to be heated, the size of the region of tissue to be heated in the direction of said straight distal tip being chosen by the amount that said straight distal tip is extended beyond said distal end of said cannula; and,

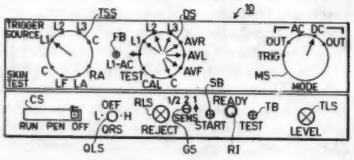
(2) making an off-axis heating of tissue located adjacent to said through-opening in said distal end of said cannula by inserting said straight off-axis lesion electrode into said cannula so as to have said off-axis distal tip extend out of said cannula distal end into the tissue to be heated and applying said radio frequency voltage to said metal portion of said off-axis lesion electrode tip, thereby causing tissue adjacent to said off-axis lesion electrode tip to be heated, the size of and the orientation of the region of tissue to be heated off of the direction of the axis of said entrance cannula shaft being chosen by the amount that said off-axis electrode tip is extended from said distal end of said cannula and by the direction in which said off-axis electrode is extended from said distal end of said cannula as determined by the relative position and orientation of said hubs of said cannula and said off-axis electrode and, the temperature of the region surrounding the distal tip can be monitored.

4,565,201

SIGNAL PROCESSING APPARATUS AND HIGH RESOLUTION ELECTROCARDIOGRAPH EQUIPMENT INCLUDING SAME

Yoram Lass, Tel Aviv, Israel, assignor to Fidelity Medical (Israel) Ltd., Tel Aviv, Israel

Filed Feb. 3, 1983, Ser. No. 463,480
Claims priority, application Israel, Jan. 11, 1983, 67660
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—696 **17 Claims**



1. Signal processing apparatus particularly useful in electrocardiograph equipment for processing ECG signals detected by electrodes placed against the subject's body, comprising:

(A) data amplifier means including:

(1) a first amplifier receiving the detected ECG signals from the electrodes and producing first amplified ECG data signals according to the gain of said first amplifier, and

(2) a second amplifier, having a substantially higher gain than said first amplifier, also receiving the detected ECG signals from the electrodes independently of said first amplifier and producing second amplified ECG data signals,

(B) signal averaging means;

(C) a control panel including manual selector means enabling the manual selection, for inputting into said signal averaging means and outputting to the electrocardiograph, either said first amplified ECG data signals from said first amplifier, or said second amplified ECG data signals from said second amplifier; and

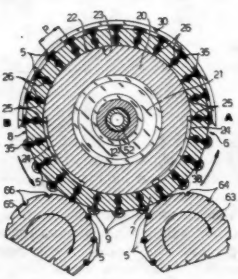
(D) a triggering circuit having a third amplifier receiving the detected ECG signals from said electrodes independently of said data amplifier means, and producing trigger pulses therefrom; and means for feeding said trigger pulses to said signal averaging means for triggering same.

4,565,202

METHOD AND APPARATUS FOR FORMING PERFORATION IN BAR-SHAPE ARTICLES

Enzo Seragnoli, and Riccardo Mattei, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

Filed Apr. 12, 1983, Ser. No. 484,425
Claims priority, application Italy, May 3, 1982, 48326 A/82
Int. Cl.[4] A24C *5/60;* **B23K** *27/00*
U.S. Cl. 131—281 **12 Claims**



1. A method for forming holes in bar-shaped articles, in particular cigarettes, comprising the steps of:

(a) causing said articles (5) to translate transversely of their axes along a predetermined path of advancement by means of a conveyor (6) on which said articles (5) are uniformly spaced with a spacing (P) which remains constant along the whole length of said path of advancement;

(b) coupling each said article (5) to said conveyor (6) by means of first retaining means (24) fixing said articles to said conveyor along at least an initial and a final portion of said path;

(c) engaging each said article, along at least an intermediate portion of said path, with second retaining means (29) comprising; for each said article (5), actuator means (28) which moves with said conveyor (6), is arranged at a fixed position relative thereto, and rotates relative to said conveyor (6) about the axis of the associated article to impart thereto a rotation about its axis together with said translation along said path; and

(d) forming about each said article, and during the advancement thereof along said intermediate portion of said path, at least one ring (2) of perforations (3) by means of at least one laser generator unit (56).

5. Apparatus for forming perforations in bar-shaped articles, in particular cigarettes, comprising a conveyor (6) to translate said articles (5) transversely of their axes and along a predeter-

mined path of advancement; a plurality of seats (9) spaced along said conveyor (6) with a spacing (P) which remains constant along the whole length of said path, each said seat (9) accommodating, in use, a respective said article (5); first retaining means (24) arranged at said seats (9) to fix each said article (5) to said conveyor (6) and within the respective said seat (9) along at least an initial and a final portion of said path; second retaining means (29) operable to engage each said article (5) along an intermediate portion of said path to hold such said article (5) within said respective seat (9), said second retaining means (29) comprising, for each said article (5), first actuator means (28) connected to said conveyor (6) for movement therewith and aligned with a respective said seat (9), each said first actuator means (28) being rotatable about the axis of the associated article (5) to impart thereto a rotation about its axis relative to the respective seat (9) together with said translation along said path; and at least a laser generator unit (59) to form, about each said article (5), at least one ring (2) of perforations (3) during advancement of said article (5) along said intermediate portion of said path.

4,565,203

APPARATUS FOR CONVEYING CIGARETTE-FILLED TRAYS TO A CIGARETTE-PACKAGING MACHINE

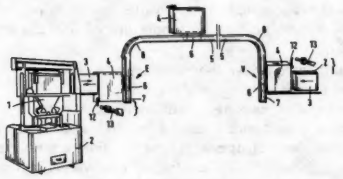
Iain G. H. Stewart, Wuppertal; Hans P. Pitz, and Alfred Brinker, both of Gevelsberg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Fr. Niepmann GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,766

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241558

Int. Cl.[4] A24C *5/354, 5/356*

U.S. Cl. 131—283 9 Claims



1. An apparatus for conveying cigarette-filled, open-topped trays from at least one tray-filling device to the hopper of at least one cigarette-packaging machine, and for returning the emptied trays to said tray-filling devices; said apparatus comprises:

a dispatch station associated with said tray-filling devices;

a receiving station associated with said cigarette-packaging machines;

a container-conveying system, which is disposed between said dispatch station and said receiving station, and which includes an essentially U-shaped guide rail system and a plurality of electrically driven travel mechanisms which respectively travel in said guide rail system; and

a plurality of receiving containers, with each of said travel mechanisms carrying one of said receiving containers, each of which, in turn, receives at least one of said trays; said U-shaped guide rail system conveys said travel mechanisms, and hence said receiving containers, from said dispatch station to said receiving station, whereby as a result of said U-shape of said guide rail system, filled trays are received by said receiving containers at said dispatch station in a normal position, with said open tops thereof directed upwardly, and are ready for withdrawal from said receiving containers at said receiving station in a position which is rotated by 180° from said normal position, and in which said open tops of said trays are directed downwardly.

4,565,204

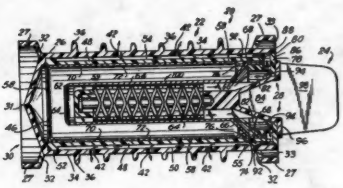
VAPOR GENERATING HAIR ROLLER

Jorgen Skovdal, Trumbull, Conn., assignor to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 461,811, Jan. 28, 1983, Pat. No. 4,520,832. This application Mar. 28, 1985, Ser. No. 716,901

Int. Cl.[4] A45D *2/02*

U.S. Cl. 132—39 5 Claims



1. A method for treating a tress of hair comprising the steps of:

wrapping a tress of hair around a roller having perforations in its outer surface and an internal portion heated to a vapor generating temperature;

inserting a removable, refillable liquid containing material within said roller at least proximate to said heated internal portion so as to generate vapor; and

dispensing said vapor through said perforations into the tress of hair.

4,565,205

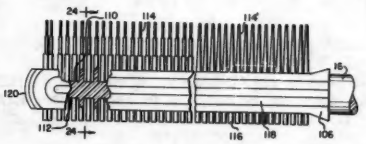
MOLDED MASCARA APPLICATOR

Charles H. Taylor, West Springfield, Mass., assignor to Super Brush Co., Inc., Chicopee, Mass.

Filed Mar. 18, 1983, Ser. No. 476,473

Int. Cl.[4] A45D *40/26*

U.S. Cl. 132—88.7 5 Claims



1. A mascara applicator comprising

an elongated plastic base having a planar top surface, a oottom surface, a longitudinal axis, a rearward end and a forward end;

a plurality of filament-like, plastic integral brush elements extending upwardly from the base top surface, the brush elements being positioned in rows arranged in parallel spaced relationship from the longitudinal axis;

the brush elements being integrally formed with the base and being integrally fabricated of the same plastic material as the material of the base to form a unitary structure,

the brush elements being between about 0.010 and 0.018 inches in their largest cross sectional dimension,

the brush elements each comprising a base and a tip, the brush elements being generally elongated in configuration and decreasing in their largest cross sectional dimension from their bases to their tips,

a plurality of short plastic tines extending integrally downwardly from the bottom surface, the tines being randomly positioned on the bottom surface; and

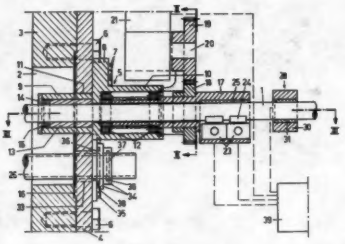
an elongated wand extending rearwardly from the rearward end of the base, the wand being of suitable length to facilitate the application of mascara.

4,565,206

APPARATUS FOR CLEANING A STEAM GENERATOR BY MEANS OF A HIGH-PRESSURE LANCE

Johannes Booij, Rhoon, Netherlands, assignor to Innus Industrial Nuclear Services S.A., Geneva, Switzerland

Filed May 11, 1984, Ser. No. 609,112
Claims priority, application Belgium, Aug. 26, 1983, 2/60192
Int. Cl.[4] F23J *3/02*
U.S. Cl. 134—112 12 Claims



1. An apparatus for cleaning a steam generator by means of a high-pressure lance, which apparatus comprises:

a base which is to be secured over an opening in the wall of the steam generator to be cleaned, and which is provided with a lance passageway wherein said lance is rotatable and axially shiftable;

a first engageable and disengageable friction coupling mounted on the lance;

means for shifting axially to-and-fro said first coupling;

a second engageable and disengageable friction coupling mounted on the lance;

means for rotating said second coupling; and

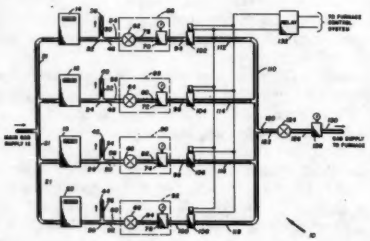
a control mechanism for controlling the couplings so that when the one coupling is engaged, the other one is disengaged.

4,565,207

METHOD FOR PROPORTIONING FUEL USAGE BY A FLUID FUELED APPARATUS

Donnell Sherrod, 327 Allendale St., Baltimore, Md. 21229

Division of Ser. No. 291,515, Aug. 10, 1981, Pat. No. 4,478,246.
This application Oct. 11, 1984, Ser. No. 659,635
Int. Cl.[4] F17D *1/04*
U.S. Cl. 137—1 2 Claims



1. A method of apportioning gas usage between a plurality of separate dwelling units all utilizing a common gas fueled appliance, each of said dwelling units having associated therewith an individual gas supply, said method comprising the steps of:

determining the quantity of heat necessary to maintain each dwelling unit at a preselected temperature;

calculating the proportion of the quantity of heat needed to maintain each dwelling unit at a preselected temperature to the total quantity of heat needed to heat all said dwelling units;

tapping each of said individual gas supplies in the same proportion as said calculated proportion corresponding to said dwelling unit associated therewith;

combining together each of said gas supplies after proportioning as recited in said last step; and

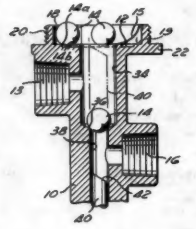
supplying said combined gas supplies to said common gas fueled appliance.

4,565,208

SEISMIC SHUT-OFF VALVE

David E. Ritchie, 6166 Palo Alto Dr., Anaheim Hills, Calif. 92807, and Edward E. Seay, 881 Nordica, Anaheim, Calif. 92806

Filed May 4, 1984, Ser. No. 607,156
Int. Cl.[4] F16K *17/36*
U.S. Cl. 137—38 23 Claims



1. A seismic actuated shut-off valve having inlet and outlet apertures communicating with opposite sides of a valve seat, comprising:

a track located above the valve seat;

at least one ball riding on the track;

an obstruction causing a ball to leave the track when a seismic disturbance causes a ball to contact the obstruction with sufficient energy, the ball falling onto the valve seat to shut-off fluid flow through the valve, said obstruction comprising an inclined surface extending over the track, the obstruction having a height which decreases across the width of the track in a direction towards an aperture in communication with the valve seat.

4,565,209

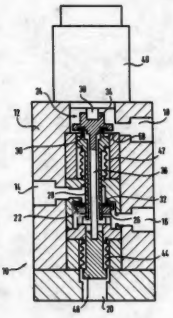
PRESSURE REGULATING VALVE WITH FEEDBACK CONTROL

Erich Ruchser, Kernen, and Helmut Ott, Stuttgart, both of Fed. Rep. of Germany, assignors to Herion-Werke KG, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,661
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305092
Int. Cl.[4] G05D *16/10*
U.S. Cl. 137—116.3 8 Claims

1. A pressure regulating valve for pneumatic and hydraulic pressure media comprising a housing having a primary connection, a secondary connection and a relief connection, a switch valve between the primary connection and the secondary connection, a relief valve between the secondary connection and the relief connection comprising a valve disc biased in one direction by a control magnet, and coupled by a push-rod to a control piston, and a control connection for controlling the operation of the pressure regulating valve in response to an external variable, said control piston disposed in the control connection adapted to be acted upon by the external variable

and said switch valve includes a valve piston having a hollow bore therein, and said push-rod extends through said hollow



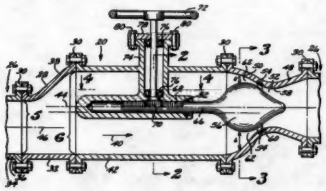
bore between said control piston and said valve disc of said relief valve.

4,565,210

THROTTLING AND SHUT-OFF VALVE FOR SLURRY PIPELINES AND THE LIKE

Otto R. Heine, Poway, and Peter M. Riede, La Jolla, both of Calif., assignors to R&H Technology, Inc., Minneapolis, Minn.

Filed Sep. 11, 1984, Ser. No. 649,513
Int. Cl.[4] F16K *1/12*
U.S. Cl. 137—219 **16 Claims**



1. A valve system particularly adapted for controlling the flow of a fluid entraining solid particulate material of the type which has a gravity induced concentration gradient in a substantially horizontally moving flow, the valve system comprising:

a conduit for the fluid having an upstream end and a downstream end;

first means for serially connecting the upstream end of the conduit to a pipeline wherein the fluid flows;

second means for serially connecting the downstream end of the conduit to the pipeline, the conduit being normally disposed substantially horizontally when it is operatively connected to the pipeline by said first and second means, whereby a gravity induced concentration gradient of solid particulate material normally develops in the flow, an upstream non-throttled portion of the conduit having a cross-sectional area available for fluid flow which is significantly larger than the cross-sectional area of the pipeline, and the longitudinal center line of the conduit being upwardly displaced relative to the center line of the upstream section of the pipeline and the bottom wall of the conduit being substantially level with the bottom wall of the pipeline;

a valve seat incorporated in the conduit;

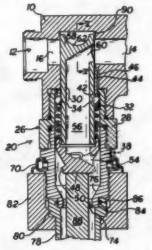
valve means disposed in the conduit, adapted and configured for being axially displaced in the conduit, for sealingly engaging the valve seat in a closed position of the valve means, the valve means and the walls of the conduit jointly comprising means for forming an opening upstream of the valve seat between the valve means and the walls of the conduit, the opening being smaller in the upper cross-sectional area of the conduit than in a lower cross-sectional area, whereby the portion of the fluid having greater concentration of entrained solid particulate material passes through a larger opening than the portion of the fluid having lesser concentration of solid particulate material.

4,565,211

HYDRAULIC MANIFOLD WITH AUTOMATIC FLOW CONTROL

Raymond E. Denney, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 23, 1984, Ser. No. 572,814
Int. Cl.[4] F16K *43/00*
U.S. Cl. 137—321 **4 Claims**



1. An automatic manifold access and flow control fitting comprising, in combination, a body having a fixed flow passage defined therethrough, a fixed fitting passage defined in said body transversely disposed to and intersecting said flow passage, an inlet port defined in said fitting passage spaced from said flow passage, an elongated tubular valve element axially displaceable within said fitting passage between a fitting sealing position sealing said inlet port at said inlet port and a flow passage blocking position wherein said valve element is located within said flow passage and blocks said flow passage against flow therethrough, a seat defined on said valve element, a seating surface defined in said fitting passage adjacent said inlet port engagable by said valve element seat at said valve element fitting sealing position to seal said inlet port, a bypass passage defined within said valve element having a first port in communication with said inlet port and a second port in communication with said flow passage when said valve element is in said blocking position, conduit attachment means defined upon said body at said inlet port, an abutment defined on said valve element adjacent said inlet port engagable with a conduit to be selectively connected to said inlet port which automatically displaces said valve element from said sealing position to said blocking position, and spring means biasing said valve element toward said sealing position.

4,565,212

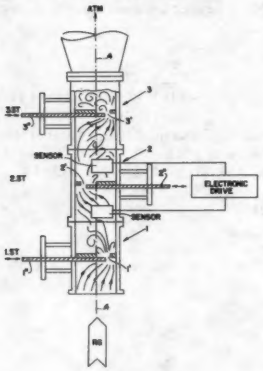
DEVICE FOR THE STEP-WISE PRESSURE RELEASE ON THE EXPANSION OF, IN PARTICULAR HOT, GASES

Walter Klein, Brunn am Gebirge, and Herbert Rhemann, Vienna, both of Austria, assignors to OMV Aktiengesellschaft, Austria

Filed Oct. 17, 1983, Ser. No. 542,337
Claims priority, application Austria, Nov. 15, 1982, 4143/82
Int. Cl.[4] F16K *31/12, 31/36*
U.S. Cl. 137—486 **6 Claims**

1. A device for step-wise release of pressurized gases copris-

ing means for controlling flow of gases at variable pressure and volume from a source to atmosphere as a function of accumulated volume and/or pressure of gases, said means including a flow conduit defined at least in part by a plurality of gate valves in series and terminating at a discharge port for discharge to atmosphere, each of said valves including a housing having a transversely movable valve member, said conduit



including an expansion space for expansion of gases between successive valve members, successive valve members and their associated orifices being on diametrically opposite sides of said conduit so that successive orifices are eccentric with respect to the longitudinal axis of said conduit, and means for adjusting the gate valves as a function of the accumulated volume stream.

4,565,213

BALL VALVE DEVICE WITH HOLD-OPEN TUBE

Bernhardt F. Giebeler, San Bernardino, Calif., assignor to Bernhardt & Frederick Co., Inc., San Bernardino, Calif.

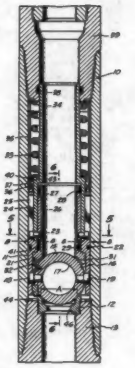
Continuation-in-part of Ser. No. 201,426, Oct. 28, 1980, Pat. No. 4,377,179. This application Sep. 29, 1982, Ser. No. 426,936

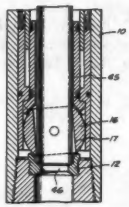
The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.[4] F16K *31/122*

U.S. Cl. 137—494 **3 Claims**

1. A ball valve device comprising, in combination: a stationary tubular housing having an axial bore, a stationary seat member secured to the housing and having a seating surface at the upper end of an axial passage, a ball valve having a central opening, means mounting said ball valve in the housing to turn between an open position in which its central opening is aligned with said housing bore and with the passage in the seat, and a closed position in which said ball valve closes against said seating surface, means for turning said ball valve between open position and closed position, a hold-open tube having a cylindrical outer surface without external projections, said hold-open tube being movable by gravity into said housing and through the central opening in the ball valve to maintain said





ball valve in open position, and an abutment below said ball valve on which said hold-open tube comes to rest.

4,565,214

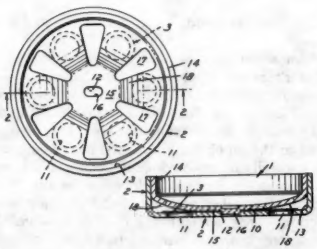
FLAPPER CHECK VALVE ASSEMBLY

Oscar D. Parman, Rochester, Mich., assignor to Dover Corporation, Troy, Mich.

Filed Jun. 4, 1984, Ser. No. 616,959

Int. Cl.[4] F16K *15/14*

U.S. Cl. 137—512.15 **12 Claims**



1. Cylindrical housing with flat multi-port integral end closure, flat multi-leaf flapper valve, and cylindrical flapper valve backer closely fitting within said cylindrical housing with convex backup segments and intermediate ports for retaining said multi-leaf flapper valve in one-way sealing orientation with the multiple ports of said housing, said backer being provided with a flat central portion adapted to engage said flat

flapper valve with interengaging means to retain relative proper sealing orientation with said multi-ported housing.

4,565,215

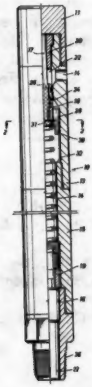
CHEMICAL INJECTION VALVE

Leslie L. Cummings, deceased, late of Houston, Tex., and by Mildred Cummings, executrix, 4018 West Alabama, Houston, Tex. 77027

Continuation of Ser. No. 366,361, Apr. 7, 1982, abandoned, which is a continuation of Ser. No. 169,634, Jul. 16, 1980, abandoned. This application May 21, 1984, Ser. No. 612,999

Int. Cl.⁴ F16K *15/00*

U.S. Cl. 137—538 **5 Claims**



1. A valve for use in injecting fluid from an annulus about a tubing string into the bore of the tubing string, wherein the tubing string includes a mandrel having means to one side of the bore for receiving the valve, said valve comprising

an elongate single wall housing which is essentially tubular from end to end having,

inlet means to interior of the housing at one end thereof, outlet means from the interior of the housing at the other end thereof, and

means cooperable with the mandrel, where so received, to open the inlet means to the annulus and the outlet means to the bore of the tubing,

a sleeve fixedly mounted within the housing near its one end,

means sealing between the sleeve and inner surface of the housing,

ports in the sleeve having outer ends connecting with a substantially unobstructed annular space between the sleeve and the inner surface of the housing which opens to an open chamber within the inner surface of the housing leading to the outlet means,

an impervious metering member fitting snugly within the sleeve for reciprocation between positions opening and closing the inner end of the ports, and

the one end of the housing being closed to form a variable volume chamber with the metering member, the inlet means comprising ports in the housing and the sleeve for connecting the annulus with the chamber

a coil spring within the open chamber and fitting relatively closely within the inner surface of the housing for urging said metering member toward closing position.

4,565,216

DEVICE FOR GRAVIMETRIC DISTRIBUTION OF LIQUID FOR MASS AND HEAT TRANSFER COLUMNS

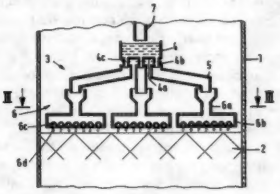
Werner Meier, Elgg, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 28, 1984, Ser. No. 584,509

Claims priority, application Switzerland, Mar. 1, 1983, 1111/83

Int. Cl.⁴ F16L *41/00*

U.S. Cl. 137—561 A **8 Claims**



1. A device for gravimetric distribution of liquid for mass and heat transfer columns, said device comprising

a container for receiving a supply of liquid, said container having a plurality of outlets for the liquid;

a plurality of individual distributors, each distributor being disposed below and communicating in vented manner with a respective outlet of said container to receive liquid therefrom; and

a plurality of metering devices, each metering device being disposed in a respective outlet of said container for metering an amount of liquid to said respective distributor in proportion to the cross-sectional area of said respective distributor to the total cross-sectional area of said distributors.

4,565,217

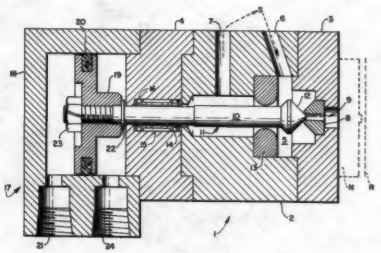
THREE-WAY POPPET VALVE, METHOD AND APPARATUS

Frederic S. McIntyre, Wellesley, Mass., assignor to Acumeter Laboratories, Inc., Marlborough, Mass.

Filed Jun. 30, 1983, Ser. No. 509,354

Int. Cl.⁴ B29B *5/00*

U.S. Cl. 137—625.5 **6 Claims**



1. In a fluid applicator system including a source of fluid and an applicator, a three-way poppet valve having a housing provided with a longitudinally extending internal chamber; a fluid supply port in the housing connected to said source to allow fluid to enter the chamber at a first region thereof; a fluid return port in the housing connected to said source to return fluid thereto, said fluid return port being disposed to communicate with the chamber at a second region thereof; a first valve seat between the first and second regions and having a circular cross-section flow bore; a fluid exit port connected to said applicator and disposed to allow fluid to exit from the chamber

at a third region thereof and provided with a second valve seat between the first and third regions having a circular cross-section flow bore of diameter substantially smaller than the diameter of the flow bore of the first valve seat, said valve seats being aligned longitudinally of said chamber; valving gate means disposed to reciprocate in said chamber between the valve seats, said valving gate means comprising a piston having a shaft extending longitudinally in said chamber through the bore of said first valve seat with a piston head at one end of the shaft between said valve seats, said piston head having opposite tapered surfaces disposed to engage said valve seats alternately, the piston head surface engaging said second valve seat being a conical surface with a tip portion that enters the bore of said second valve seat, said conical surface contacting said second valve seat along a line-contact circle the diameter of which has a magnitude that is a minor portion of the magnitude of the diameter of the base of said conical surface, the piston head surface engaging said first valve seat contacting that valve seat along a line-contact circle the diameter of which is substantially larger than the diameter of the first-mentioned line-contact circle; and means connected to the opposite end of said shaft for switching the gate means alternately between said valve seats alternately to close off fluid flow to the return port and to direct fluid from the fluid supply port through the chamber to and through the exit port, and to close off the fluid flow through the exit port and to direct fluid from the fluid supply port through the chamber to and through the return port, the configuration of the piston shaft, piston head, and valve seats being predetermined to maintain substantially constant flow area from said supply port out of said chamber, thereby to maintain substantially constant pressure in said chamber regardless of the position of said piston head relative to said valve seats.

4,565,218

LIQUID MIXING VALVE WITH SINGLE HANDLE

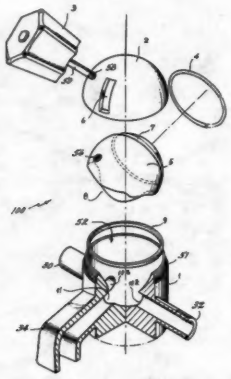
Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan

Continuation-in-part of Ser. No. 356,402, Mar. 9, 1982, Pat. No. 4,505,301. This application Jul. 18, 1983, Ser. No. 514,606

The portion of the term of this patent subsequent to Mar. 19, 2002, has been disclaimed.

Int. Cl.[4] F16K *11/087*

U.S. Cl. 137—625.41 **10 Claims**



1. A valve for mixing a first liquid with a second liquid, comprising:

a valve body having a wall shaped so as to define a spherical cavity therein, said wall including means for defining a first orifice therethrough for injecting a first liquid into said cavity, said wall further including means for defining a second orifice therethrough for injecting a second liquid into said cavity, said first and second liquids mixing in said cavity to form a mixture thereof, said wall further including means for defining a third orifice therethrough for discharging said mixture from said cavity;

a spherical guide body rotatably disposed in said spherical cavity, said guide body including means for defining a mixing cavity therein selectively communicating with a variable portion of the areas said first and second orifices and with said third orifice as said guide body rotates, said guide body further including means for defining a substantially annular slot therein;

a substantially annular seal disposed in said slot for selectively enclosing said first and second orifices to prevent liquid from escaping from said first orifice and said second orifice; and

a handle, connected to said guide body, reciprocally movable along a rectilinear path and rotatable about an axis thereof, said guide body rotating in response to rotation of said handle to vary the ratio of said first and second liquids in said mixture by varying a ratio of the area of said first orifice communicating with said mixing cavity to the area of said second orifice communicating with said mixing cavity, rectilinear motion of said handle along said path rotating said guide body to change the rate said mixture discharges through said third orifice by simultaneously increasing the area of said first orifice communicating with said mixing cavity and the area of said second orifice communicating with said mixing cavity.

4,565,219

MULTIPLE-POSITION SOLENOID-OPERATED CONTROL VALVE

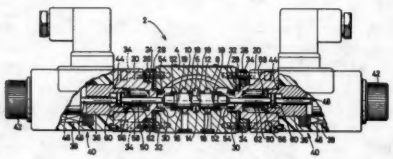
Mahito Kunogi, Nagoya, Japan, assignor to The Oilgear Japan Company, Aichi, Japan

Filed Sep. 1, 1983, Ser. No. 528,634

Claims priority, application Japan, Sep. 13, 1982, 57-159362; May 11, 1983, 58-82162

Int. Cl.[4] F15B *13/044*

U.S. Cl. 137—625.65 **24 Claims**



1. A multiple-position solenoid-operated control valve, comprising:

a valve body having portions to define a plurality of ports;

a valving member fitted in said valve body axially slidably to change communicating conditions of said ports;

first biasing means for normally holding said valving member in a normal position thereof with a first biasing force;

a movable iron core axially movable in parallel to said valving member to move the same;

an electric circuit including a solenoid to apply to said movable iron core actuating forces of different magnitudes which increase in at least two steps including a first operating force to move said valving member from said normal position to a first operated position thereof against said first biasing force, and a second operating force greater than said first operating force;

a plunger normally held in an original position thereof and operatively connected to said movable iron core after a predetermined distance of movement of the latter by said first operating force against said first biasing force;

second biasing means for biasing said plunger with a second biasing force in a direction toward said movable iron core

and holding the same at an original position thereof, said second biasing force being selected to be greater than a difference between said first operating force and said first biasing force and smaller than a difference between said second operating force and said first biasing force, said plunger being moved from said original position together with said movable iron core by said second operating force against a sum of said first and second biasing forces until said valving member has been moved to a second operated position thereof; and

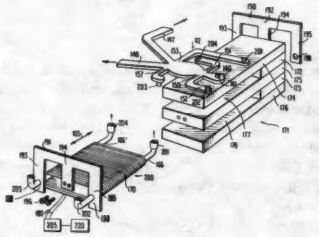
an adjusting mechanism for changing said original position of said plunger relative to said normal position of said valving member axially of said plunger and said valving member, said adjusting mechanism being operable to change said original position of said plunger without separating said movable iron core, said solenoid, said plunger and said second biasing means from said valve body.

4,565,220

LIQUID METERING AND FLUIDIC TRANSDUCER FOR ELECTRONIC COMPUTERS

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Columbia, Md.

Filed Feb. 28, 1983, Ser. No. 470,791
Int. Cl.[4] F15C *01/04*
U.S. Cl. 137—835 **16 Claims**



1. In a liquid metering apparatus for a utilization system having computer means for producing electrical control signals for controlling the liquid flow to said utilization system, the improvement comprising,

bistable fluidic switch means, said bistable fluidic switch means having a diverging-converging reversing chamber in which the pressure is always greater than any downstream pressure, and a power nozzle supplying liquid under pressure from a liquid supply to said diverging-converging reversing chamber and then through a common outlet to at least a pair of output channels,

means for converting electronic control signals from said computer to fluid signals for controlling the switched state of said fluidic switch element,

a first output channel connected to said common outlet for delivering liquid to said utilization system when said bistable fluidic switch is in one of its bistable states,

a second output connected to said common outlet constituting a return to said liquid supply when said bistable fluidic switch is in the other of its bistable states, and

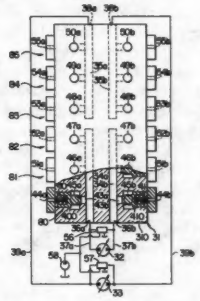
means controlled by said electronic control signals for controlling said means for converting to switch the states of said bistable fluidic switch element and control the amount of liquid flow to said first channel and said utilization system.

4,565,221

CONTROL VALVE ASSEMBLY

Kunihiko Yoshida; Eiki Izumi, both of Ibaraki, and Shuichi Ichiyama, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP83/00173, § 371 Date Feb. 2, 1984, § 102(e) Date Feb. 2, 1984, PCT Pub. No. WO83/04289, PCT Pub. Date Dec. 8, 1983
PCT Filed May 31, 1983, Ser. No. 582,575
Claims priority, application Japan, Jun. 2, 1982, 57-93022
Int. Cl.[4] F15B *13/06, 13/09*
U.S. Cl. 137—885 **9 Claims**



1. A control valve assembly having a plurality of control valves each including a pair of logic valves, each of the logic valves having a pump port, a work port and a pilot port, said control valve assembly comprising:

a housing; and

a pair of hydraulic fluid passageways arranged in said housing so as to extend in side-by-side relationship with each other, one of the passageways being in communication with the pump ports of a first plurality of logic valves each constituting one of said pair of logic valves for providing one of a common hydraulic fluid supply conduit and a discharge conduit to said first plurality of logic valves, and the other of the passageways being in communication with the pump ports of a second plurality of logic valves each constituting the other of said pair of logic valves for providing the other of said common hydraulic fluid supply conduit and discharge conduit to said second plurality of logic valves;

each of said pair of logic valves which constitutes one of said control valves being arranged in said housing in such a manner that they are located in an opposed relationship to each other in a direction substantially perpendicular to a direction in which said hydraulic fluid passageways extend; and

the work ports of each of said pair of logic valves being oriented substantially in a direction substantially perpendicular to both the direction in which said hydraulic fluid passageways extend and the direction in which said pair of logic valves are arranged whereby all the work ports of said logic valves are opened in the same side of the housing.

4,565,222

INFLATABLE APPARATUS FOR USE IN PLUGGING A LARGE DIAMETER PIPE

Philip L. Lundman, 3631 Fredonia-Kohler Rd., Fredonia, Wis. 53021

Continuation of Ser. No. 522,206, Aug. 11, 1983, abandoned. This application May 3, 1985, Ser. No. 730,246
Int. Cl.[4] F16L *55/12*
U.S. Cl. 138—93 **1 Claim**

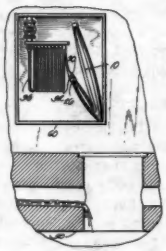
1. Apparatus for use in plugging a large diameter pipe for

preventing flow of water through the large diameter pipe, the apparatus comprising:

a locker adapted to house an elongated fire hose and an inflatable bag,

a hose having opposite ends, said hose being housed in said locker, one of said opposite ends being connected to a source of water pressure, and

an inflatable bag housed in said locker, said inflatable bag being adapted to be connected to the other of said opposite ends of said hose and being adapted to be removed from said locker and inserted into the large diameter pipe wherein said inflatable bag can be inflated in the large diameter pipe and maintained in an inflated state in the large diameter pipe so as to plug the large diameter pipe and form a water tight seal therein, the inflatable bag including opposite ends and a longitudinal axis, said inflatable bag being comprised of at least one large sheet of thin flexible fluid impermeable material, said large sheet of material including parallel edges, said edges being sealed together to form a fluid tight seam extending substantially parallel to said longitudinal axis, and said material forming a plurality of folds parallel to said longitudinal axis, and said inflatable bag being sufficiently flexible that when said inflatable bag is deflated, said inflatable bag can be freely folded in a direction transverse to said longitudinal



axis, said plurality of folds at one of said opposite ends of said inflatable bag being wrapped around said longitudinal axis in a spiral configuration when viewed in cross sections generally perpendicular to said longitudinal axis, and a first collar surrounding the flexible material forming said plurality of folds spirally wrapped around said longitudinal axis at said one of said opposite ends, and clampingly engaging said flexible material to form a fluid closure at said one of said opposite ends, means for providing a connection between the other of said opposite ends of said hose and said inflatable bag, said means for providing a connection including a coupling, said plurality of folds at the opposite end of said inflatable bag being wrapped around the longitudinal axis in a spiral coonfiguration when viewed in cross section generally perpendicular to said longitudinal axis, and a second collar surrounding said plurality of folds of material spirally wrapped around said longitudinal axis and forming said opposite end of said inflatable bag and clampingly engaging said flexible material forming said opposite end to form a fluid tight seal between said plurality of folds of flexible material and said coupling, and said elongated flexible bag having a diameter when said elongated flexible bag is inflated substantially larger than the diameter of said elongated flexible bag when said elongated flexible bag is deflated.

4,565,223

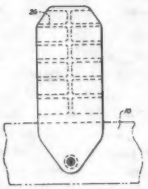
STABILIZED NOSE GUIDE

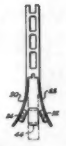
Wayne A. Hall, Taylors, S.C., assignor to Steel Heddle Mfg. Co., Greenville, S.C.

Filed Oct. 29, 1984, Ser. No. 666,236

Int. Cl.[4] D03C *9/06*

U.S. Cl. 139—91 **2 Claims**





1. A nose guide for use on a harness frame having top and bottom slats being joined by end braces to form a substantially rectangular frame, said nose guide having a pair of walls being joined at one end and being separated on the other end so that said separated ends can be slipped over a frame slat and secured to said frame slat by means of a fastener extending through said separated ends and said frame slat, the improvement comprising:

a cylindrical bore of a first diameter provided in said frame slat;

a first cylindrical post of a second diameter carried on an inner wall of one of said separated ends of said nose guide,

a second cylindrical post of said second diameter carried on an inner wall of the other separated end of said nose guide directly opposite said first cylindrical post so as to abut against said first cylindrical post when said separated ends of said nose guides are brought together with said first and second cylindrical post extending through said cylindrical bore in said frame slat,

a cylindrical stabilizing member having an inside diameter slightly greater than said second diameter to slip on said first and second cylindrical posts;

said cylindrical stabilizing member having an outer diameter slightly less than said first diameter so as to be inserted in said bore of said frame slat;

said cylindrical stabilizing member being carried on and encompassing said first and second post with opposed ends of said cylindrical stabilizing member abutting against said opposed inner walls of said separated ends of said frame slat, and

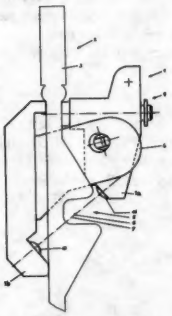
said fastener drawing said separated ends tightly together against said frame slat causing said cylindrical post to abut against each other with said ends of said cylindrical stabilizing member abutting against said inner walls of said separated ends of said nose guide producing a rigid connection between said nose guide and said frame slat.

4,565,224

APPARATUS FOR MONITORING WEFT THREAD IN A WEAVING MACHINE

Hans-Peter Keller, Wagen, Switzerland, assignor to Loepfe Brothers Limited, Wetzikon, Switzerland

Filed Oct. 31, 1983, Ser. No. 547,006
Claims priority, application Switzerland, Nov. 11, 1982, 6566/82
Int. Cl.[4] D03D *51/347*
U.S. Cl. 139—370.2 30 Claims



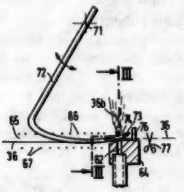
4. The apparatus as defined in claim 2, wherein:
said transmitter and said receiver being arranged on a common side of the reed.

4,565,225

WEAVING MACHINE

Gotthilf Bertsch, Rüti, Switzerland, assignor to Maschinenfabrik Sulzer-Rüti AG, Rüti, Sweden

Filed Aug. 20, 1984, Ser. No. 642,542
Claims priority, application European Pat. Off., Sep. 1, 1983, 83810397.6
Int. Cl.[4] D03D *47/48*
U.S. Cl. 139—434 7 Claims



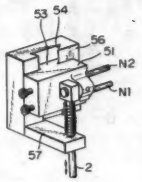
1. In a weaving machine, comprising:
a weft thread supply cone which remains outside a weaving shed during weft insertion;
weft threads being unwound from said weft thread supply cone during weft insertion;
a selvedge-tucking needle for tucking ends of the weft threads which lie outside the weaving shed into a subsequently formed weaving shed, the improvement which comprises:
an air nozzle for transferring said weft thread ends of said weft threads to said selvedge-tucking needle;
said selvedge-tucking needle having an outer free end; and
an eyelet arranged at said outer free end for inserting each said weft thread end.

4,565,226

METHOD AND APPARATUS FOR SHIFTING MAIN NOZZLES ON A FLUID-JET TYPE LOOM

Kanji Tsuji, Kanazawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 346,596, Feb. 8, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 655,520
Claims priority, application Japan, Feb. 9, 1981, 56-018383
Int. Cl.[4] D03D *47/30*
U.S. Cl. 139—435 5 Claims



1. Apparatus for shifting main nozzles on a fluid-jet loom on which different yarns are sequentially and alternately subjected to weft insertion along a weft direction, said loom incluidng a weft transportation channel which extends along said weft direction and which has an entrance end, said apparatus comprising:
a main nozzle holder arranged on said lathe and movable with respect to said weft transportation channel in a plane lying generally parallel to said weft direction, said main nozzle holder having front and rear ends, said rear end being coupled to a horizontal pivot extending in said weft direction;
a plurality of linear main nozzles mounted to said main nozzle holder is vertically juxtaposed arrangement in front of said entrance end of said weft transportation channel and extending in parallel to said weft direction;
a vertically extending shifter rod having an upper end privoted to said front end of said main nozzle holder and a lower end;
a first horizontal shaft extending in parallel to a rocking shaft of said loom and operationally coupled to a main shaft of said loom;
a cam secured on said first horizontal shaft;
a radially extending bracket secured to said rocking shaft;
a first bifurcated lever pivoted at its apex to said bracket, one arm of said first bifurcated lever being provided with a slide bottom having a curvature concentric with said rocking shaft, and another arm of said first bifurcated lever being pivoted to said lower end of said shifter rod;
a second horizontal shaft arranged in parallel to and between said first horizontal shaft and said rocking shaft; and
a second bifurcated lever pivoted at its apex to said second horizontal shaft, one end of said second bifurcated lever being provided with a cam follower kept in resilient pressure contact with said cam, and another end of said second bifurcated lever being provided with a roll in contact with said slide bottom on said first bifurcated lever.

4,565,227

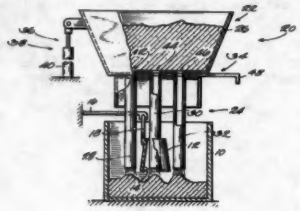
PROCESS AND APPARATUS FOR SURROUNDING FOAM PATTERN WITH SAND

Robert C. Shebuski, Hubertus, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 15, 1984, Ser. No. 621,117
Int. Cl.[4] B65B *1/04*
U.S. Cl. 141—1 8 Claims

1. A process for surrounding a mold pattern with sand, the mold pattern including an inner cavity having a bottom, said process comprising the steps of holding the mold pattern in a mold flask, and selectively depositing sand into the mold flask outside the mold pattern and inside the inner cavity of the mold

pattern such that, when the level of the sand outside the mold pattern is adjacent the level of the bottom of the inner cavity,



thereafter the levels of the sand inside the inner cavity and outside the mold pattern are maintained the same as the mold flask is filled with sand.

4,565,228

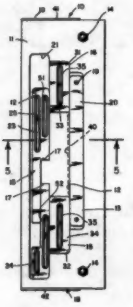
STRIKE TEMPLATE FOR A PORTABLE ROUTER

Felix C. Ponce, 978 S. Westmoreland Ave., Los Angeles, Calif. 90006

Continuation of Ser. No. 494,855, May 16, 1984. This application May 29, 1984, Ser. No. 614,688

Int. Cl.[4] B27F *5/00*; B27M *3/00*

U.S. Cl. 144—27 **4 Claims**



1. A strike template for use in combination with a hand-held router in order to guide the hand-held router in cutting an an opening for a strike on a door jamb, said strike template comprising:

a. a rectangular base having a substantially rectangular slot with an extended substantially rectangular tonguecavity;

b. a first rectangular groove on said top surface of said rectangular base disposed adjacent said rectangular slot;

c. a first L-shaped member and a second L-shaped member both of which are formed from a flat, rectangular bar and which are disposed within said rectangular groove and slidably and adjustably coupled to said top surface of said rectangular base in order to vary the width of the opening for the strike;

d. adjusting means mechanically coupled to said rectangular base, for adjusting the position of said first and second L-shaped members thereby varying the width of said rectangular slot,

e. a second rectangular groove and a third rectangular groove, which is oppositely disposed from said second rectangular groove, both of which are disposed on said top surface of said rectangular base adjacent said rectangular slot;

f. a first flat, rectangular member and a second flat, rectangular member both of which are disposed within said second and third rectangular grooves and slidably and adjustably coupled to said top surface of said rectangular base in order to vary the length of the strike;

g. adjusting means mechanically coupled to said rectangular base, for adjusting the position of said first and second flat, rectangular members in order to adjust the length of the strike in the side of the door jamb thereby varying the length of said rectangular slot;

d. tongue-cavity width varying means for varying the width of said rectangular tongue-cavity, mechanically coupled to said rectangular base; and

e. position varying means for varying the lateral position of said strike template on the door jamb, mechanically coupled to said rectangular base.

f. securing means for securing said rectangular base to the door jamb.

4,565,229

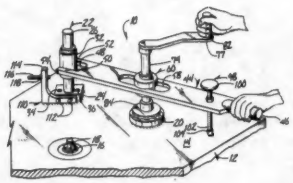
WORK PIECE HOLDING DEVICE

Charles R. Larson, 509 Pleasant St., Webster City, Iowa 50595

Filed Apr. 2, 1984, Ser. No. 595,708

Int. Cl.[4] B27C *5/00*

U.S. Cl. 144—154 **18 Claims**



1. A work piece holding device for use with a work table having a flat upper surface and a work station on said upper surface, a power work tool positioned adjacent said work station, said holding device comprising:

a pedestal adapted to be fixed to said work table;

an elongated arm member having first and second opposite ends;

universal hinge means connecting said first end of said arm member to said pedestal for pivotal movement about a horizontal axis and also for swinging movement about a vertical axis;

handle means on said second end of said arm member;

work piece holding means;

bearing means for rotatably mounting said holding means to said arm member at a point intermediate said first and second opposite ends thereof, said bearing means permitting rotation of said holding means with respect to said arm member about a rotational axis which is perpendicular to the longitudinal axis of said arm member;

crank means connected to said holding means for causing rotation of said holding means about said rotational axis and

a leg member mounted to said arm member adjacent said second end thereof, said leg member extending downwardly from said arm member and having a foot at its lower end for engaging said upper surface of said table.

4,565,230

MOVABLE CURTAIN SYSTEMS FOR GREENHOUSES AND COMPONENTS THEREFOR

Barend C. Van Rijn, 116 Pottruff Rd. South, Hamilton, Ontario, Canada (L8K 4A2), and Cordell G. Van Rijn, 745 Hwy. No. 8, Fruitland, Ontario, Canada (L0R 1L0)

Filed Oct. 3, 1983, Ser. No. 538,308

Int. Cl.[4] A01G *9/14*; E06B *3/30*

U.S. Cl. 160—84 R **14 Claims**

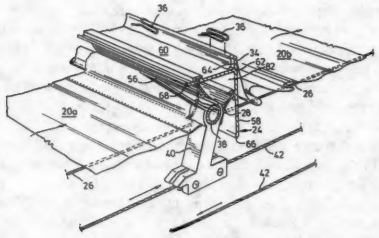
6. A self-supporting sealing member for a movable curtain system for greenhouses of the kind in which a curtain having a

straight leading edge is opened and closed by longitudinal movement of the said straight leading edge transverse to its length, the curtain leading edge in the closed position of the curtain engaging the said sealing member, the sealing member comprising:

an elongated metal body of at least approximately L-shaped transverse cross-section having a first leg which in operation extends transverse to the direction of movement of the curtain, and having a second leg which in operation extends generally parallel to the direction of movement of the curtain;

the first leg extending beyond its junction with the second leg to provide a bead over which the adjacent fixed edge of a curtain can be folded and secured thereto; and

a first elongated flexible seal element extending lengthwise of the sealing member and protruding from the second leg



spaced from the first leg whereby upon engagement by the curtain leading edge it is deflected by the engagement towards the first leg, so as to be held in sealing engagement with the curtain leading edge by the resilience of the material of the seal element, and;

a second elongated flexible seal element also extending lengthwise of the sealing member and protruding from the first leg at a location spaced from the second leg free edge and from its junction with the second leg, whereby upon engagement of the curtain leading edge with the first seal element and deflection of the latter towards the first leg the curtain leading edge engages the second seal element for deflection thereof toward the first leg, so that the second seal element also is held in sealing engagement with the curtain leading edge by the resilience of its material.

4,565,231

ROLLER BLIND UNIT

Heinz E. Moessner, 1631 Eli Dr., Reno, Nev. 89511, and Hans P. Albrecht, Am Farrenberg 12 a, 8870 Günzburg-Reisensburg, Fed. Rep. of Germany

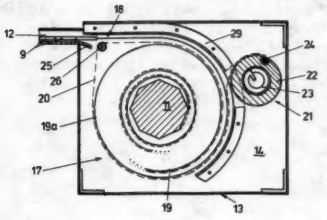
Continuation-in-part of Ser. No. 528,296, Aug. 31, 1983, abandoned. This application Jun. 28, 1984, Ser. No. 625,419

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 8226196[U]

Int. Cl.[4] E06B *9/08;* **E04F** *10/06*

U.S. Cl. 160—133 **17 Claims**

1. A roller blind unit for use in conjunction with an opening of a building, such opening having a degree of slope that is within a small angle to the horizontal, comprising a blind made up of articulated slats whose ends form sides of the blind, guide rails adapted to take up such sides of the blind at sides of said opening, such guide rails being so configured as to be alined with the form of the opening in the building and so configured as to cause a braking of the blind, a blind take-up shaft on which said blind is adapted to be wound and unwound in layers in a spiral coil, said guide rails ending at points spaced from said take-up shaft so as to define a path of said blind therebetween that is generally level, a blind driver element coiled up with said blind on said shaft between the coil layers of the blind and interleaved therewith, an innermost end of said driving element being attached to said shaft, a driver unit spaced radially from said shaft by a distance more than equal to the diameter of the said blind when fully coiled up on said shaft, said driver element having its innermost end attached to said shaft and its outermost end anchored on said driver unit, said driver



element being trained circumferentially round at least half of the outermost layer of said blind when coiled on said shaft starting at a gap defined by the coiled blind and a level part of said blind running out from said coil.

4,565,232

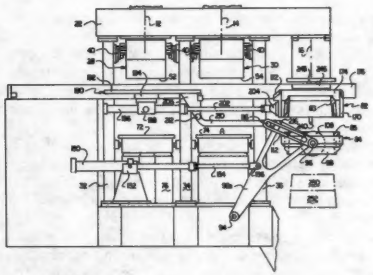
FOUNDRY SAND MOLDING APPARATUS

Edward D. Abraham, 6695 Farview Rd., Brecksville, Ohio 44140

Continuation of Ser. No. 176,981, Aug. 11, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 535,932

Int. Cl.[4] B22C *15/30, 17/00*

U.S. Cl. 164—181 **8 Claims**



1. An apparatus comprising a cope molding means for molding a cope mold section, a drag molding means for molding a drag mold section, and a stripping means for removing said cope and drag mold sections from their respective flasks and for assembling said cope and drag mold sections, said cope molding means, said drag molding means and said stripping means each being laterally spaced from each other and arranged in a side-by-side relationship such that the centerlines of said cope molding, drag molding and stripping means lie in a common vertical plane, said drag molding means being located between said cope molding means and said stripping means, said cope and drag molding means substantially simultaneously molding said cope and drag mold sections, a cope flask holding means and a drag flask holding means for holding a cope flask and a drag flask respectively, and a support means for supporting said cope flask holding means and said drag flask holding means, respectively, and for moving said cope flask holding means laterally along a straight path and said drag flask holding means laterally and downwardly along an arcuate path from said cope molding means and said drag molding means, respectively, into vertical alignment at said stripping means to effect alignment of said cope and drag mold sections at said stripping means, said straight path and said arcuate path lying in said common vertical plane, and said support means effect-

ing inverting of said drag flask holding means while moving said drag flask holding means from said drag molding means to said stripping means.

4,565,233

METHOD AND APPARATUS FOR COMPACTING GRANULAR MOULDING MATERIALS

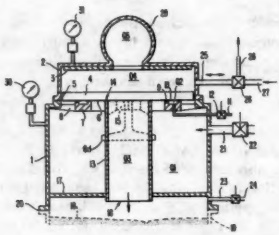
Kurt Fischer, and Hans Tanner, both of Schaffhausen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Sep. 27, 1983, Ser. No. 535,559

Claims priority, application Switzerland, Oct. 1, 1982, 5799/82

Int. Cl.[4] B22C *15/00*

U.S. Cl. 164—37 36 Claims



1. A method of compacting granular material, especially granular foundry moulding material, using the thrust of a pressurized gas against the exposed upper surface of a mass of moulding material loosely poured around a pattern, comprising the steps of

establishing first, second and third volumetric spaces Q1, Q2 and Q3 all having openings facing in the same direction and having edges surrounding the openings, space Q3 additionally having a second opening facing toward the exposed surface,

providing a sealing organ having at least one sealing surface movable between a sealing position in which the sealing surface closes the openings of spaces Q1, Q2 and Q3 and a released position in which the organ is spaced from the openings,

establishing a pressurizable control space Q4 at least partially surrounding the organ and acting against a surface of the organ facing away from the sealing surface such that pressurized gas therein tends to urge the organ towards its sealing position, the surface area acted upon by the gas in space Q4 being greater than the surface area acted upon by the gas in space Q1,

supplying a gaseous medium to space Q4 until the space is pressurized to a predetermined pressure level to hold the sealing organ in its sealing position,

delivering a gaseous medium under pressure to space Q1 until that space is pressurized to a substantially equal or higher pressure level than space Q4, no greater than 19 bar, the higher level being less than that required to overcome the force of the gas in space Q4, and

abruptly decreasing the pressure in space Q4 to allow the force exerted by the gas in space Q1 to overcome the force exerted by the gas in space Q4, thereby abruptly moving the sealing organ away from the openings of spaces Q1, Q2 and Q3 and suddenly increasing the surface area of the sealing organ acted upon by the pressure of the gas in space Q1, thereby fully moving the sealing organ away from spaces Q1, Q2 and Q3 and allowing sudden expansion of the gas in space Q1 to pass through space Q3 and create a pressure thrust against the moulding material surface, thus compacting the material.

13. An apparatus for forming and guiding a gas pressure thrust for compacting granular moulding material, especially foundry moulding material, the material being loosely poured into a mould housing surrounding a pattern, the apparatus comprising the combination of a pressure housing having an interior volume Q1 and an outlet opening;

means for supplying gas under pressure to said pressure housing to a predetermined pressure level;

a control housing having an interior volume Q4;

means for supplying gas under pressure to said control housing to a preselected pressure level;

means defining at least one passageway extending from an inlet opening in a predetermined plane to an outlet opening facing said moulding material, said at least one passageway having an interior volume Q3, said inlet opening facing in the same direction as said outlet opening of said pressure housing;

seal means in said control housing for closing said outlet opening of said pressure housing and said inlet opening of said passageway, said seal means being movable between a closed position in which said openings are isolated from each other and a release position in which said openings are uncovered and in fluid communication with each other, the gas under pressure in said control housing urging said seal means toward said closed position, and the gas under pressure in said pressure housing urging said seal means toward said release position;

means defining an accelerator chamber having a volume Q2 and having an opening facing in the same direction as said outlet opening of said volume Q1 and said inlet opening of said volume Q3, said opening of said volume Q2 being closed by said seal means when said seal means is in said closed position, said means defining said chamber being effective to cover an accelerator surface portion of said seal means so that the surface area of said seal means acted upon by said gas in said volume Q1 is less than the surface area of said seal means acted on in the opposite direction by said gas in said volume Q4; and

vent means for selectively decreasing the pressure in said volume Q4,

whereby said volumes Q1 and Q4 can be pressurized to a substantially equal pressure level while holding said seal means in said closed position, after which the pressure in said volume Q4 can be abruptly decreased, permitting the force exerted by the gas in volume Q1 to move said seal means away from the volume Q2, suddenly enlarging the surface area acted upon by the gas in volume Q1 and reversing the force balance such that said seal means is abruptly moved to the release position, allowing the gas in volume Q1 to expand and pass rapidly through said at least one passageway to exert a sudden force on the exposed surface of said moulding material to thereby compact said material.

4,565,234

CASTING PROCESS AND INSTALLATION FOR A NON-FERROUS METAL IN THE MOLTEN STATE

Jean F. Rimbert, Igny, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 1, 1983, Ser. No. 471,010

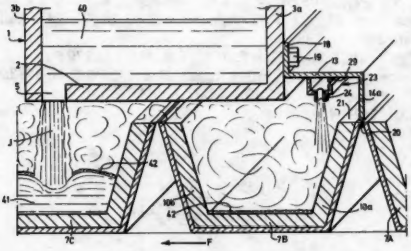
Claims priority, application France, Mar. 8, 1982, 82 03817

Int. Cl.[4] B22D *21/02*

U.S. Cl. 164—66.1 13 Claims

11. Process for gravity casting using a free jet of non-ferrous metal including zinc that can encounter the problem of a solid metal scum at the point of impact of the jet of cast metal coming from a storage reservoir of the molten metal to an ingot mold serving as a receiving vessel for the same, the process comprising positioning a set of ingot molds transversely side-by-side, passing said ingot molds serially under the molten metal storage tank, isolating at least two adjacent said ingot molds by covering the same by an isolating wall so as to form a zone isolated from the ambient air, wherein at least two adjacent ingot molds in the set are covered at any one time by

the isolating wall, placing the ingot molds with the isolating wall directly below the molten metal storage reservoir so that there is a direct passage made between said storage reservoir and the ingot molds such that the molten metal casting jet passes through the isolated zone over its entire length, rendering said isolated zone inert by introducing into said zone an inert gas at a rate such that the atmosphere of an internal cavity

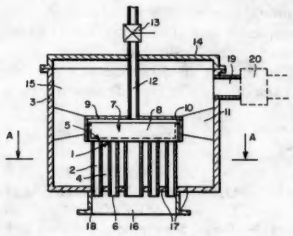


of each said ingot mold has an oxygen content no greater than a predetermined subnormal oxygen content, the ingot molds being rendered inert before passing under the molten metal jet, and maintaining the injection of said inert gas at a rate such that the atmosphere in the vicinity of said molten metal jet has an oxygen content less than said predetermined subnormal content.

4,565,235
APPARATUS FOR COMPACTING GRANULAR MOLDING MATERIALS BY PRESSURIZED GASEOUS MEDIUMS

Kurt Fischer, and Hans Tanner, both of Schaffhausen, Switzerland, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed Oct. 13, 1983, Ser. No. 541,573
Claims priority, application Switzerland, Oct. 15, 1982, 6014/82
Int. Cl.[4] B22C *15/00*
U.S. Cl. 164—169 **20 Claims**



1. An apparatus for compacting granular molding material, particularly foundry molding sand, by a surge of pressure of a gaseous medium, comprising:

a pressure chamber having coupling means, mounted at an outlet of said pressure chamber, for forming a closed system with a molding unit in which molding material has been loosely poured;

a passage providing fluid communication between said pressure chamber and said outlet, said passage including a plurality of hollow members extending within said pressure chamber and separated from each other in said pressure chamber by spaces which are continuous, undivided extensions of said pressure chamber, each of said hollow members having a first open end within said pressure chamber and a second open end opening at said pressure chamber outlet;

a common packing element releasably covering and closing each of said first open ends to control flow of fluid pressure from said pressure chamber to the molding unit, said packing element having a first side engaging said hollow members and subjected to fluid pressure in said pressure chamber and having an opposite second side; and

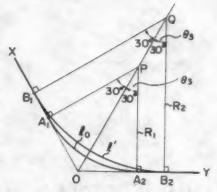
pressure means for holding said packing element in opposition to forces applied to said packing element by said fluid pressure in said pressure chamber;

whereby, upon releasing said pressure means, said packing element will move quickly away from said hollow members by the forces applied by said fluid pressure in said pressure chamber permitting said fluid pressure in said pressure chamber to pass through said hollow members and be discharged through said pressure chamber outlet.

4,565,236
METHOD OF AND MOLD FOR CONTINUOUSLY CASTING STEEL BEAM BLANKS

Tamenori Masui; Hitoshi Ono, both of Sakai, and Toshihiko Ariyoshi, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 347,023
Claims priority, application Japan, Feb. 10, 1981, 56-17544
Int. Cl.[4] B22D *11/04*
U.S. Cl. 164—459 **9 Claims**



1. In a method for continuously casting a steel beam blank, in which:

a continuous casting mold is provided having a vertically opening cavity with a web part constructed and arranged to form the web of the blank, a plurality of flange parts constructed and arranged to form a plurality of flanges of the blank, and a plurality of concavely-curved fillet parts constructed and arranged to form respective transitional, concavely-curved fillet parts of the blank where an inside of a respective said flange adjoining a respective tip of that flange blends into a respective flanking surface of said web;

molten steel is poured into said mold to establish and maintain a meniscus of molten steel in the mold near an upper end of the mold;

steel is cooled in the mold as it moves downwards, sufficiently to form a perimetrically intact, sufficiently supporting shell about a beam blank strand as such strand continuously emerges from a lower end of the mold and is withdrawn therefrom at a substantially steady speed, during which downward movement in the mold, the solidifying shell tends to shrink in transverse cross-sectional area at least partly as a result of solidification and cooling,

an improvement aimed at preventing the formation of restrained longitudinal cracks in the beam blank shell at the concavely-curved fillet parts of mold, comprising:

in connection with providing said mold, providing said concavely-curved fillet parts to progressively increase in radius of curvature and thereby decrease in magnitude of curvature at each of a plurality of successively lower imaginary transverse cutting planes of said mold cavity disposed between said meniscus and said lower end in-

cluding at a plurality of levels where the steel is solidifying to form and increase the thickness of said shell, such progressive increase in radius of curvature being sufficient in magnitude and in progressiveness, taken together with any downward tapering of the flange parts and web part of the mold, to maintain strain which is formed due to tensile stress applied to regions of said solidified shell from inside of said flange parts to the web part of said mold, to a magnitude not exceeding the permissible upper strain limit for crack formation in the beam blank being cast.

2. A continuous casting mold for casting a steel beam blank, comprising:

a web part;

a plurality of curved fillet parts; and

a plurality of flange parts;

all these parts being arranged to define a mold cavity constructed and arranged for forming a strand;

said curved fillet parts being provided with a varying curvature which is successively decreased in a casting direction in accordance with an amount of free shrinkage of a solidified shell of the strand, thereby maintaining strain which is formed due to tensile stress applied to regions of a solidified shell of said strand, from inside of said flange parts to the web part of said mold, to a level not exceeding the permissible upper strain limit for crack formation in the steel beam blank being cast.

4,565,237

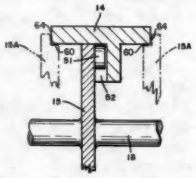
EXPANDABLE QUENCH SURFACE

Seymour Draizen, Old Bridge, and Henry J. Sossong, Randolph, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 562,944, Dec. 19, 1983, abandoned, which is a continuation of Ser. No. 244,430, Mar. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 67,256, Aug. 17, 1979, abandoned. This application Dec. 18, 1984, Ser. No. 682,497

Int. Cl.[4] B22D *11/06*

U.S. Cl. 164—463 **4 Claims**



1. Apparatus for continuously casting metallic filaments by directing a stream of molten alloy onto a rotating quench surface, comprising:

(a) a quench wheel having a drive disk mounted between two sealing side disks for rotation about a shaft and concentrically supporting a hoop-like quench surface near the center of the quench surface; and

(b) between the quench surface and the drive disk, at least three sliding-pin or sliding-key radial expansion joints for allowing unrestrained lateral and radial thermal growth of said quench surface while maintaining its concentricity in a fixed angular relationship with said drive disk.

4,565,238

METHOD OF STIRRING MOLTEN STEEL IN A CONTINUOUSLY CASTING MOLD AND AN APPARATUS THEREFOR

Shinji Kojima; Hisakazu Mizota, both of Okayama; Masanori Kodama, Kurashiki, and Yasuharu Miyazaki, Soja, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan and ASEA AB, Västerås, Sweden

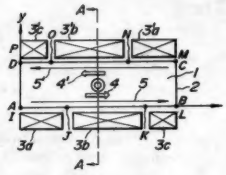
PCT No. PCT/JP82/00461, § 371 Date Aug. 4, 1983, § 102(e) Date Aug. 4, 1983, PCT Pub. No. WO83/02079, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 8, 1982, Ser. No. 522,170

Claims priority, application Japan, Dec. 11, 1981, 56-198359

Int. Cl.[4] B22D *27/02*

U.S. Cl. 164—468 **2 Claims**



1. In a method of stirring molten steel in a continuously casting mold having a pair of short side walls and a pair of long side walls, which method includes stirring the molten steel in the mold by moving it in the form of a circulating flow in a horizontal direction along the walls of the mold, by means of an electromagnetic stirrer arranged on the walls of the mold, the improvement which comprises using a plurality of electromagnetic stirrers varying the magnetic field intensity of the electromagnetic stirrers depending upon the position of the molten steel in the mold, so as to accelerate or decelerate or maintain at a constant flow rate the circulating flow of molten steel in the mold along the flow direction, and adjusting the magnetic field intensity of the electromagnetic stirrers such that the circulating flow of the molten steel in the mold is accelerated in an upstream region of the mold along the flow direction near one of said pair of short side walls of the mold, and is decelerated in a downstream region of the mold along the flow direction near the other of said pair of short side walls of the mold, and is kept at a constant flow rate in the intermediate region of the mold along the flow direction between the upstream region and the downstream region thereof, thereby forming a smooth flow of the circulating molten steel flow in the mold.

4,565,239

APPARATUS FOR SCREENING A STREAM OF MOLTEN METAL

Ernst Meier, Wollerau, Switzerland, assignor to F.H.I. Finanz-, Handels und Investment AG, Zug, Switzerland

Filed Aug. 8, 1984, Ser. No. 639,372

Claims priority, application Switzerland, Aug. 12, 1983, 4415/83

Int. Cl.[4] B22D *11/00*

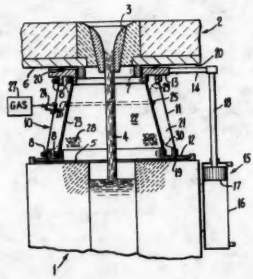
U.S. Cl. 164—475 **24 Claims**

1. Apparatus for screening a stream of molten metal, comprising in combination:

a bellows;

means for retaining splashes and heat radiating from said stream of molten metal and for providing inside said bellows an annular distribution chamber for protective gas to be blown into an area traversed by the stream of molten metal, including a flexible screening shroud of heat-resistant, gas-permeable material encompassing said area tra-

versed by the stream of molten metal and being inwardly spaced from said bellows; and



means for gas-tightly interconnecting corresponding ends of said bellows and shroud.

4,565,240

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METAL SHEET

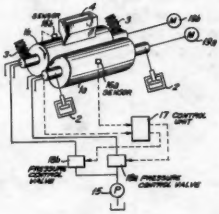
Kiyoshi Shibuya; Takahiro Kan; Yo Ito, all of Chiba; Hiroshi Shimanaka, Funabashi, and Yoshiaki Tanaami, Yokohama, all of Japan, assignors to Kawasaki Seitetsu Kabushiki Kaisha, Hyogo and Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Continuation of Ser. No. 540,556, Oct. 11, 1983, abandoned. This application Jul. 25, 1985, Ser. No. 758,582

Claims priority, application Japan, Oct. 12, 1982, 57-178942

Int. Cl.[4] B22D *11/06*

U.S. Cl. 164—480 **1 Claim**



1. In a method of continuously casting metal sheet wherein molten metal is poured into a gap between a pair of casting rolls, the improvement comprising the steps of: providing each of said rolls having an inner cylindrical surface and an outer cylindrical surface with a negative crown; exerting pressure on the inner cylindrical surface of each of said rolls so that said outer cylindrical surface of each of said rolls is expanded radially outwardly to become a true cylindrical surface when the pouring of the molten metal is initiated; and decreasing the pressure exerted on the inner cylindrical surface of each of said rolls when the outer cylindrical surface of each of said rolls is heated by the molten metal as the pouring continues thereby contracting the outer cylindrical surface of each of said rolls so that the outer cylindrical surface of each of said rolls is maintained true without any heat crown.

4,565,241

PROCESS FOR PREPARING A SLURRY STRUCTURED METAL COMPOSITION

Kenneth P. Young, Ballwin, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,812

Int. Cl.[4] B22D *27/02*

U.S. Cl. 164—499 **3 Claims**

1. A process for preparing a shaped metal part from a slurry structured metal composition comprising degenerate dendritic solid particles contained within a lower melting matrix composition, said process comprising,

preparing a slurry structured composition by vigorously agitating at a given shear rate the metal in molten form as it solidifies at a solidification rate such that, in the absence of agitation, a dendritic structure would be formed, the ratio of the shear rate to the solidification rate being maintained at a value ranging from 2×10^3 to 8×10^3,

completely solidifying the slurry structured composition,

reheating the slurry structured composition to a semi-solid slurry having a volume fraction liquid ranging from 0.05 to 0.80 and

shaping the reheated slurry to form a shaped metal part.

4,565,242

HEAT ACCUMULATING MATERIAL ENCLOSING CONTAINER AND HEAT ACCUMULATING APPARATUS

Naomichi Yano; Hajime Ito, and Shigeru Tanaka, all of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

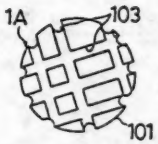
PCT No. PCT/JP82/00063, § 371 Date Sep. 10, 1982, § 102(e) Date Sep. 10, 1982

PCT Filed Mar. 8, 1982, Ser. No. 416,658

Claims priority, application Japan, Mar. 13, 1981, 56-36131; Aug. 24, 1981, 56-125525; Aug. 24, 1981, 56-133163

Int. Cl.[4] F28D *21/00*

U.S. Cl. 165—10 **1 Claim**



1. A heat accumulating material capsule wherein a large number of heat transfer area enlarging portions are provided over the entire surface of a spherical body, while a latent heat accumulating material is combined within the main body, the heat transfer area enlarging portions comprising a plurality of first annular grooves parallel to each other and a plurality of second annular grooves parallel to each other crossing the first grooves.

4,565,243

HYBRID HEAT PIPE

Donald M. Ernst, Leola, and James L. Sanzi, Lancaster, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Nov. 24, 1982, Ser. No. 444,448

Int. Cl.[4] F28D *15/00*

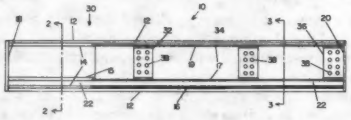
U.S. Cl. 165—104.26 **3 Claims**

1. A heat pipe comprising:

a completely enclosed casing of sufficiently thin and ductile material to permit bending of the casing at least once without rupture of the casing;

a first wick structure located within the active evaporator region of the heat pipe, made from sintered powder material and located in intimate contact with the inside surface of the casing;

a second wick structure, located within a region of the heat pipe other than the evaporator region, made from flexible screen material and located in intimate contact with the inside surface of the heat pipe, one end of which abuts the sintered material of the first wick structure at the point where the first and second wicks meet,



wherein the second wick is comprised of at least two separate screen layers, the outer layer being sintered to the inside surface of the casing and the next layer being located in intimate contact with the outer layer; and

an appropriate heat transfer fluid.

4,565,244

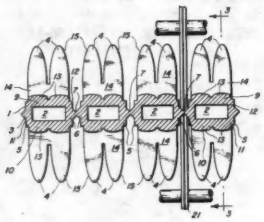
TUBULAR ARTICLES OF MANUFACTURE AND METHOD OF MAKING SAME

Joseph M. O'Connor, Chicago, and Stephen F. Pasternak, Park Ridge, both of Ill., assignors to Peerless of America, Inc., Chicago, Ill.

Division of Ser. No. 890,539, Mar. 27, 1978, Pat. No. 4,203,311. This application Aug. 2, 1979, Ser. No. 63,101

Int. Cl.⁴ F28F *3/04, 1/16*

U.S. Cl. 165—181 **6 Claims**



1. A heat exchanger blank comprising

a. a one-piece body portion comprising

(1) a plurality of elongated tubular members disposed in side-by-side relation to each other,

b. each of said tubular members having a side wall,

c. said side walls of adjacent ones of said tubular members being connected together by portions of said body portion which are lesser in thickness, than the adjacent side walls and extend the length of said body portion.

4,565,245

COMPLETION FOR TAR SAND SUBSTRATE

Donald S. Mims, and Richard S. Allen, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 9, 1983, Ser. No. 492,867

Int. Cl.⁴ E21B *43/24, 36/00*

U.S. Cl. 166—50 **1 Claim**

1. A well completion for producing viscous hydrocarbons from a substrate layer comprising unconsolidated sand particles in which said hydrocarbon is releasably retained, which completion includes;

an elongated well liner **17** disposed in a wellbore **15** formed within the substrate layer **13**, at least a portion of the well of said elongated well liner being perforated **18** and extending in a substantially horizontal disposition through said layer **13**,

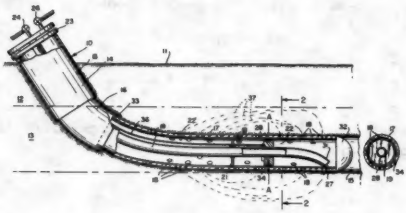
a well head **23** at one end of said elongated liner **17** and including;

fluid flow control valves **24** and **26**,

fluid barrier means **28** carried on said fluid conduit **19** and being controllably displaceable within said well liner **17** to divided the annular passages **22** and **22'** into injection and producing segments respectively at opposed sides of the barrier,

said barrier means **28** including;

a radially expandable element which is capable of being expandably actuated to engage the liner **17** inner wall,



barrier actuating means including a conduit **36** extending from the well head **23** to said radially expandable element, and means to selectively direct a stream of actuating fluid to said expandable element for urging the latter into the expanded condition and in engagement with the liner **17** wall,

said fluid conduit **19** being longitudinally adjustable within liner **17** to displace the fluid barrier means **28** to a desired location, and as said barrier means **28** operably engages fluid conduit **19** to be slidably adjusted therealong, and

displacement means engaging barrier means **28** to slidably adjust the position of the latter longitudinally within liner **17**.

4,565,246

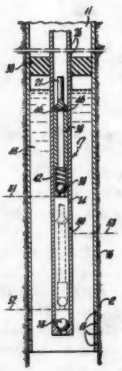
RECIPROCATING PUMP WITH PARTIAL FLOW REVERSAL

Terry L. Frazier, Paso Robles, Calif., and Jan D. Dozier, Huntsville, Ala., assignors to Texaco, Inc., White Plains, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,900

Int. Cl.⁴ E21B *43/25*

U.S. Cl. 166—112 **10 Claims**



1. In a reciprocating type pump for lifting fluid from wells

and the like subject to blockage by mobile fines, said pump having a pump barrel with a standing check valve at the bottom, a pump plunger with a traveling check valve at the bottom, and means for reciprocating said plunger in said barrel over a predetermined stroke distance having an upper limit of travel and a lower limit of travel, the improvement comprising a port in said barrel located above the middle of said stroke distance,

means associated with said plunger for closing said port during said stroke distance while said plunger is below said port, and

means for biasing said traveling check valve closed against back pressure less than a predetermined value whereby said fluid is pumped back to reverse flow and unblock said mobile fines during part of said stroke distance.

4,565,247

WIRELINE SET TUBING RETRIEVABLE SEAL BORE PACKER APPARATUS

William T. Tapp, Yorktown, and William M. Roberts, Deer Park, both of Tex., assignors to Elder, Inc., Yorktown, Tex.

Filed Feb. 3, 1984, Ser. No. 576,820
Int. Cl.[4] E21B *23/00, 23/06*
U.S. Cl. 166—123 **19 Claims**

10. A retrievable subsurface well conduit engaging apparatus comprising:

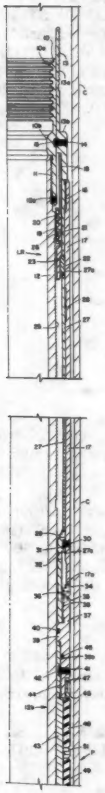
an elongated support means running into a well conduit to a selected depth;

engaging means mounted on said support means operable to releasably engage the inner wall of said well conduit to prevent vertical movement therein;

operating means having first and second members operatively connected to said engaging means, said operating means being connectible with an actuating device for selectively engaging and releasing said engaging means from the inner wall of said well conduit;

locking means positioned between the first member of said operating means and said support means operable to prevent vertical movement of said operating means when said engaging means engages the inner wall of said well conduit, said locking means being selectively shiftable to a position between the second member of said operating means and said support means; and

coupling means operatively connecting the first member of said operating means to said locking means for releasing



said operating means upon vertical, non-rotating movement of the first member of said operating means.

4,565,248

METHOD FOR PRODUCING WATER SOLUBLE RESOLS AND USE THEREFOR

Clifford L. Spiro, Schenectady, and Edward J. Lamby, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 446,134, Dec. 2, 1982, Pat. No. 4,499,311. This application Jul. 24, 1984, Ser. No. 633,750
Int. Cl.[4] E21B *43/22, 43/40*
U.S. Cl. 166—267 **27 Claims**

1. A method for recovering crude oil comprising:

(a) reacting the effluent stream of a process for producing bisphenol-A with an aldehyde in the presence of a compound for releasing hydroxide ions in water at a temperature not to exceed 100° C.;

(b) dissolving the product of step a in water;

(c) introducing the solution produced in step b into an oil well in order to emulsify at least a portion of the crude oil contained therein; and

(d) recovering the emulsion created in step c from the oil well.

4,565,249

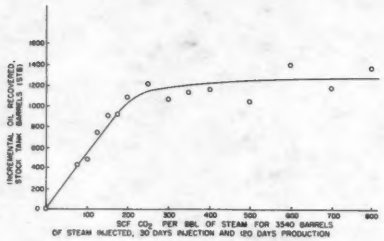
HEAVY OIL RECOVERY PROCESS USING CYCLIC CARBON DIOXIDE STEAM STIMULATION

Farrokh N. Pebdani, Coppell, and Winston R. Shu, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 561,407, Dec. 14, 1983, abandoned. This application Sep. 20, 1984, Ser. No. 652,541

Int. Cl.⁴ E21B *43/24*

U.S. Cl. 166—303 **8 Claims**



1. A method of recovering oil from a subterranean, viscous oil-containing formation penetrated by at least one well in fluid communication with a substantial portion of the formation, comprising:

(i) injecting a mixture of carbon dioxide and steam into the formation through the well, the ratio of carbon dioxide to steam being from 200 to 300 SCF carbon dioxide per barrel of steam (cold water equivalent); and

(ii) recovering fluids including oil from the formation through the well.

4,565,250

HORSE SHOE PAD

Kent A. Vasko, Hinckley, Ohio, assignor to Sorbo, Inc., Twinsburg, Ohio

Filed Aug. 3, 1983, Ser. No. 519,989

Int. Cl.⁴ A01L *7/02*

U.S. Cl. 168—12 **20 Claims**

1. A horse shoe pad comprising a shock absorbing layer of flexible polyurethane of essentially linear structure containing unsatisfied hydroxyl groups, having a compression set of less than 15%, and a recovery which is delayed after compression by at least 0.7 second, and stabilizing means for stabilizing a surface of said shock absorbing layer, said stabilizing means including a fabric layer bonded to one side of said shock absorbing layer.

4,565,251

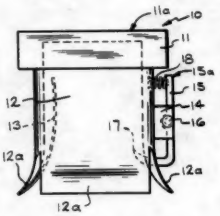
POST DRIVING DEVICE

Michael R. Cischke, D-19 Twyckingham Apt., 4634 S. Hagadorn, East Lansing, Mich. 48823

Filed Mar. 26, 1984, Ser. No. 593,715

Int. Cl.⁴ B23B *45/16*

U.S. Cl. 173—128 **7 Claims**



1. A driving device adapted to fit on an end and over sides of a post having a vertically oriented longitudinal axis defining the direction the post is to be driven which comprises:

(a) a body portion having an open end and a closed end adapted to loosely fit around the longitudinal axis adjacent the end of the post and along the sides of the post;

(b) a cap portion secured on the body portion at the closed end to provide a surface for impacting the device for post driving; and

(c) retaining means mounted on the body portion which clamps the driving device on the post along opposite sides of the post while driving and quickly releases the device after the post has been driven, the retaining means including a hook with a curve towards the cap and being moveably mounted on the outside of the body portion so as to be driveable into the post through an opening in the body portion to hold the device on the post while the post is being driven and a curved flat spring mounted along the axis inside the device so that the device slides onto and off of the post on the spring and so that the spring engages at least one side of the post which compresses the spring to reduce the curve of the spring.

4,565,252

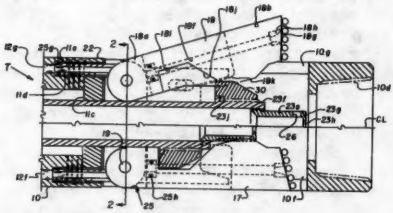
BOREHOLE OPERATING TOOL WITH FLUID CIRCULATION THROUGH ARMS

Thomas R. Campbell; William L. Cunningham, and Gregg S. Perkin, all of Kingwood, Tex., assignors to LOR, Inc., Houston, Tex.

Filed Mar. 8, 1984, Ser. No. 587,501

Int. Cl.⁴ E21B *10/32*

U.S. Cl. 175—269 **12 Claims**



1. Apparatus for performing operations in an oil well drilling borehole or other borehole, comprising:

an elongated generally cylindrical body having a main bore there through, said body having a plurality of lateral openings therein;

said body having a plurality of circumferentially spaced directional chambers which extend between said main bore and said plurality of lateral openings;

a plurality of expandable arms, each arm having a first end and a second, operating end having an operating surface or element thereon for engaging the side of a borehole and performing an operation thereon;

pivot means mounted with said body and with said first end of said expandable arms for mounting each of said plurality of expandable arms in one of said lateral body openings for movement between a closed position in which said arm is positioned in said lateral body opening and second, expanded operating position in which said operating end of said arm engages said borehole;

means for engaging said plurality of expandable arms and holding said expandable arms in an operating position;

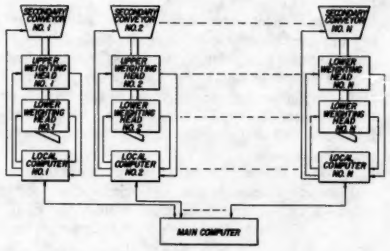
each of said expandable arms having a bore therein, which bore extends from said first end of said expandable arm and terminates at said second operating end;

a rotary fluid transfer means for each expandable arm, each of said rotary fluid transfer means being mounted with said body in fluid communication with one of said circumferentially spaced directional chambers and with said first end of said expandable arm substantially surrounding said pivot means for directing fluid from said one directional chamber to said bore in said expandable arm for directing fluid outwardly of said expandable arm.

4,565,253
COMPUTERIZED COMBINATION WEIGHER WITH PRESET OPTIMUM WEIGHER DISCHARGE

James A. Berlebner, Sugarland, and Charles J. Reifel, Houston, both of Tex., assignors to Penta-Pak Inc., Houston, Tex.

Filed Feb. 3, 1984, Ser. No. 574,296
Int. Cl.⁴ G01G *19/00, 19/22, 13/02*
U.S. Cl. 177—1 **8 Claims**

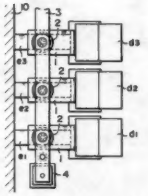

SECONDARY CONVEYOR NO. 1
SECONDARY CONVEYOR NO. 2
SECONDARY CONVEYOR NO. N
UPPER WEIGHTING HEAD NO. 1
LOWER WEIGHTING HEAD NO. 1
LOCAL COMPUTER NO. 1
UPPER WEIGHTING HEAD NO. 2
LOWER WEIGHTING HEAD NO. 2
LOCAL COMPUTER NO. 2
UPPER WEIGHTING HEAD NO. N
LOWER WEIGHTING HEAD NO. N
LOCAL COMPUTER NO. N
MAIN COMPUTER

1. A method of weighing product for packaging comprising the steps of providing a plurality of weighing stations comprising pairs of upper and lower weighing units, setting the weight on each of the upper weighing units of each weighing station at a different fraction of the desired package weight, delivering product to the upper weighing unit of each weighing station until the fractional weight of the desired package weight at which each upper weighing unit is set is reached, transferring the product from the upper weighing unit to the lower weighing unit in each weighing station for check weighing, and selecting that combination of weighing stations having fractional package weight most nearly equal to but not less than the desired final package weight for delivering of product to the open package presetting an optimal number of weighing stations delivering product to a single open package, comparing the optimal number with the actual number of weighing stations delivering product to the open package and, when the optimal number is less than the actual number, increasing the fractional weight at which each of the upper weighing units is set and, when the optimal number exceeds the actual number, decreasing the fractional weight at which each of the upper weighing units is set.

4,565,254
MEASURING APPARATUS

Yoshikazu Matsuura, Tokyo, Japan, assignor to Teraoka Seiko Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,270
Claims priority, application Japan, Aug. 31, 1982, 57-152030; Aug. 31, 1982, 57-132531[U]; Jun. 30, 1983, 58-118727
Int. Cl.⁴ G01G *19/14, 19/22, 23/14*
U.S. Cl. 177—25 **21 Claims**



1. In a measuring apparatus including a distributing table for transferring and distributing product to be measured, a plurality of measuring hoppers arranged about a circumference of the distributing table for receiving therein the product on the distributing table, measuring means for measuring the transferred product in the hoppers, and computer means for selecting a plurality of measuring hoppers whose weight of product accommodated therein is substantially equal to a set weight to exhaust the measured product from the hoppers, the improvement comprising a span adjusting mechanism having at least one member engaging with a respective reference weight arranged in the proximity of a respective one of each of said measuring means to place or remove all said reference weights in unison onto or from said measuring means.

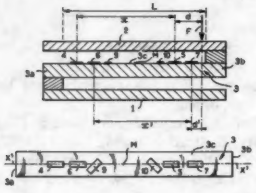
4,565,255
WEIGHING DEVICE WITH STRAIN GAGES

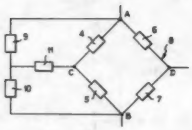
Michel Sarrazin, Rumilly, France, assignor to SEB S.A., Selongey, France

Filed Oct. 19, 1984, Ser. No. 662,794
Claims priority, application France, Oct. 26, 1983, 83 17058
Int. Cl.⁴ G01G *3/14;* **G01L** *1/22*
U.S. Cl. 177—211 **6 Claims**

1. A weighing device comprising a base plate (1) and a platform (2) for carrying the load to be weighed, said platform being substantially parallel to said base plate, at least one metal bar (3) being placed between said base plate and said platform, the opposite ends (3*a*, 3*b*) of said bar being rigidly fixed to said base plate (1) and to said platform (2) in order to permit flexural deformation of said bar under the action of the load applied on the platform, said bar being adapted to carry flexure-sensitive strain gages (4, 5, 6, 7) connected electrically in a Wheatstone bridge circuit (8) and torsion-sensitive strain gages (9, 10) connected to said bridge circuit in order to cancel the torsional stresses detected by the flexure-sensitive strain gages, the bar (3) being provided on one and the same flat face (3c) with two pairs (4, 6; 5, 7) of flexure-sensitive strain gages substantially aligned on the longitudinal axis (X—X') of the bar, wherein the gages of each pair (4, 6; 5, 7) are connected in opposition in the Wheatstone bridge and wherein two torsion-sensitive strain gages (9, 10) are coupled in series and connected respectively to the supply terminals (A, B) of the

Wheatstone bridge (8) and wherein an adjustable resistor (11) is connected in parallel between the two torsion-sensitive





gages (9, 10) and with one (C or D) of the terminals for measurement of the Wheatstone bridge signal.

4,565,256

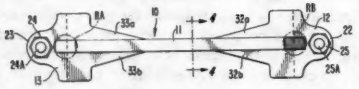
UNIVERSAL BATTERY HOLDDOWN

Henry R. Valdez, Carson, Calif., assignor to Mr. Gasket Company, Cleveland, Ohio

Filed May 10, 1983, Ser. No. 493,325

Int. Cl.[4] B62D *25/00*

U.S. Cl. 180—68.5 **20 Claims**



17. An elastomeric holddown device for a battery comprising:

first and second spaced end brackets, said end brackets having means to receive battery retaining means and portions designed to abut the top and sides of said battery to retain the battery in place,

a center strap, said center strap extending between the end brackets, the ends of said center strap terminating at said brackets, said center strap tapering in cross-sectional area at its ends,

whereby the center strap may be flexed perpendicularly to its axis to place the brackets in abutment with the sides of the battery.

4,565,257

MULTI-MODE STEERING SYSTEM

Charles B. Hanson, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Feb. 8, 1984, Ser. No. 578,091

Int. Cl.[4] B62D *5/06*

U.S. Cl. 180—135 **12 Claims**

1. A material handling implement having a multi-mode steering system, comprising:

a steerable, articulable frame having a front portion and a rear portion, said frame including articulating means pivotally connecting said front and rear frame portions for movement with respect to each other;

a pair of rear wheels mounted on respective opposite sides of said rear frame portion;

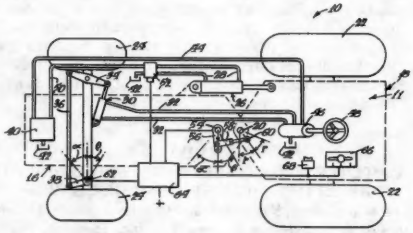
a pair of steerable front wheels mounted on respective opposite sides of said front frame portion, each of said front wheels being mounted for steering movement about a respective generally vertical axis through different first and second angles from a straight-ahead disposition with respect to said front frame portion;

steering linkage means operatively connecting said front wheels for steering said front wheels in unison;

first articulating hydraulic motor means operatively connected to and extending between said front and rear frame portions so that selective fluid pressurization of said first motor means articulates said frame;

second steering hydraulic motor means operatively connected with said steering linkage means so that selective fluid pressurization of said second motor means steers said front wheels;

first sensor means operatively connected with said front and rear frame portions for producing a first signal corresponding to the relative angular position of said front and rear frame portions, said first sensor means being operatively connected with said frame portions such that said first signal differs in value attendant to the same degree of articulation of said frame portions in opposite directions from a straight-ahead disposition;



second sensor means operatively connected with said steering linkage means for producing a second signal corresponding to the angular position of said front wheels, said second sensor means being operatively connected with said steering linkage means at one of said front wheels so that said second signal differs in value attendant to steering moving of said one front wheel through said first and second angles; and

steering control means operatively connected with said first and second sensor means for selectively coordinating operation of said first articulating motor means with operation of said second steering hydraulic motor means to provide a plurality of modes of steering control for said implement, whereby selective coordinated operation of said first articulating motor means attendant to operation of said second steering motor means results in equal, right-hand and left-hand angular articulation of said frame portions attendant to steering movement of said one front wheel through said differing first and second angles.

4,565,258

STEREO HEADSET SYSTEM FOR USE IN A WET ENVIRONMENT

Donald F. Butler, 2404 Nearcliff St., Torrance, Calif. 90505, and Mark E. Shelton, 2020 Gibraltar Rd., Landers, Calif. 92284

Filed Aug. 7, 1984, Ser. No. 638,396

Int. Cl.[4] H04R *25/00*

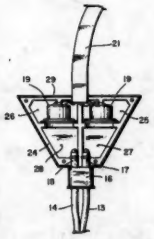
U.S. Cl. 181—129 **1 Claim**

1. A stereo headset system for use with a stereo sound system and a stereo headset device of the stethoscope type having a pair of sound tubular mains and a coupling plug which is

mechanically and acoustically coupled to the pair of sound tubular mains, said stereo headset system comprising:

a. an enclosure having a first chamber, a second chamber, a third chamber and a fourth chamber with said third and fourth chambers being mechanically and acoustically coupled to the coupling plug of the stereo headset device;

b. a first electro-acoustic transducer which is disposed in said first chamber of said enclosure and which is acoustically coupled to said third chamber of said enclosure;



c. a second electro-acoustic transducer which is disposed in said second chamber of said enclosure and which is acoustically coupled to said fourth chamber of said enclosure;

d. water-proofing means for water-proofing said first and second chambers of said enclosure; and

e. electro-coupling means for electrically coupling said first and second electro-acoustic transducers to the stereo sound system whereby said stereo headset system transmits sounds from the stereo sound system through the stereo headset device to an individual who is in a wet environment during both social and recreational periods.

4,565,259

CONNECTION BLOCK

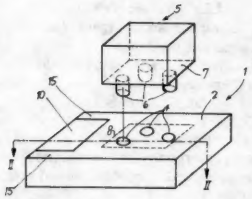
Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,605

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326802

Int. Cl.[4] F01N *1/10*

U.S. Cl. 181—230 **8 Claims**



1. An adapter block for the connection of pneumatic structural elements, comprising a block body having a flat contact surface against which a flat surface of a pneumatic structural element is engageable, said block body having at least one port extending through said flat contact surface and an exhaust duct connected to said port, said block body having at least a portion made of structural foamed plastic defining an expansion chamber, said block body having at least one wall bounding said exhaust chamber, said expansion duct extending through said one wall and having a volume less than a volume of said expansion chamber, and a porous wall connected to said block body and closing said expansion chamber.

4,565,260

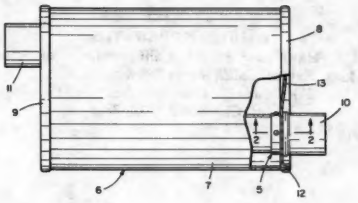
MECHANICAL LOCK JOINT FOR VEHICULAR EXHAUST SYSTEM MUFFLER AND THE LIKE

Wayne A. Scheidt, Wheaton, Ill., and Robert J. Paterick, Concord, Tenn., assignors to Maremont Corporation, Chicago, Ill.

Filed Oct. 2, 1984, Ser. No. 656,946

Int. Cl.[4] F01N *7/18*

U.S. Cl. 181—243 **6 Claims**



1. In a vehicular exhaust system muffler having a housing with a shell and end panels, and tubes through the end panels into the housing, a mechanical tube and end panel joint comprising:

an integral, annular, radially outwardly extending bead on a first tube of said tubes, a tube opening in a first end panel of the end panels, an integral, annular flange of said first end panel adjacent the tube opening, the flange extending along the first tube radially outward of the first tube and adjacent the bead, the first tube extending through the opening within the first flange, a plurality of integral, interlocking protrusions on the first tube and first flange;

a shoulder formed by the flange with the panel, the shoulder abutting the bead.

4,565,261

DETACHABLE GALLERY FOR USE ON BUILDINGS OR THE LIKE

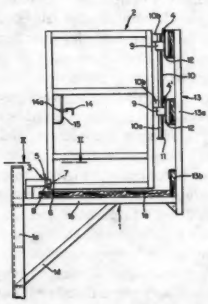
Josef Maier, Schwimmbadstr. 3, D-7611 Steinach, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,244

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 3310317

Int. Cl.[4] E04G *3/00*

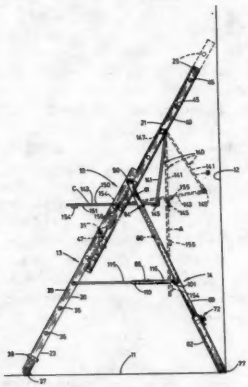
U.S. Cl. 182—113 **22 Claims**



1. A gallery for supporting personnel and/or materials at an elevated level, comprising a support; a gate; means for articulately connecting said gate to said support so that the gate is movable between at least one open position and a closed position as well as between a raised and lowered position, at least while the gate assumes or approaches said closed position; and blocking means provided on said support and located in the

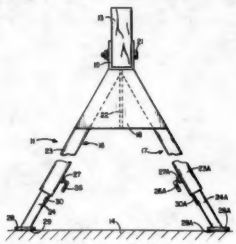
path of movement of said gate in a direction from said open position beyond said closed position, said gate being arranged to bypass said blocking means in said raised position.

4,565,262
LADDER APPARATUS
Donald E. Hawkins, Concord, Calif., assignor to Stanley E. Hawkins, Exeter, Calif., a part interest
Filed Jun. 29, 1984, Ser. No. 626,319
Int. Cl.[4] E06C *1/22, 7/16*
U.S. Cl. 182—116 **10 Claims**



1. A support apparatus for retaining a ladder in a stable upright attitude and being selectively adjustable to conform to the environment in which the ladder is to be supported, the support apparatus comprising a pair of leg members pivotally mounted on the ladder at spaced first points defining a first line reference substantially right-angularly related to the ladder, each leg member of said pair having a lower portion linearly adjustable to define a selected length for the leg member; a first pair of brace assemblies individually mounted on the leg members at predetermined pivot substantially equal distances from the first points of their respective leg members for substantially pivotal movement, each brace assembly of said first pair composed of components linearly adjustable relative to each other to define a selected length for the brace assembly and means borne by a distal end thereof for releasable attachment on the other of said leg members at a predetermined attachment point spaced from said first point of that leg member; and a second pair of brace assemblies individually mounted on the ladder at second points defining a second line of reference substantially parallel to the first line of reference and spaced therefrom for substantially pivotal movement, each brace assembly of said second pair composed of components linearly adjustable relative to each other to define a selected length for the brace assembly and means borne by a distal end thereof for individual releasable attachment on one of the leg members whereby the leg members are adapted for independent positioning in selected positions in conforming relation to said environment and in supporting relation to the ladder and the brace assemblies of said first and second pairs of brace assemblies are independently adjustable for said releasable attachment on the leg members to brace said leg members in the positions selected.

4,565,263
SAWHORSE WITH EXTENDIBLE AND CONTRACTIBLE LEG ASSEMBLIES
Ted J. Southworth, 2494 Oaklane, Chetek, Wis. 54728
Filed Jun. 10, 1985, Ser. No. 743,090
Int. Cl.[4] F16M *11/00*
U.S. Cl. 182—184 **20 Claims**



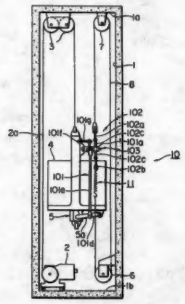
1. A sawhorse comprising: a cross beam having opposite ends, a first leg assembly secured to one end of the cross beam, and a second leg assembly secured to the other end of the cross beam, each of said leg assemblies having a pair of downwardly and outwardly directed legs having adjacent upper ends, a U-shaped holder secured to said upper ends, said cross beam being located in said holder, means securing the holder to the cross beam, each leg comprising a first tubular member having a longitudinal passage open at the lower end thereof and a second member telescoped into said passage of the first tubular member, foot means on the lower end of the second member adapted to engage a support surface, releasable lock means mounted on the first member engageable with the second member to hold the second member in an adjusted position thereby adjusting the elevation of the cross beam relative to the support surface, a stop bar secured to said first member, said stop bar having a first end extended into the passage and a second end projected downwardly away from the lower end of said first member, block means secured to said second member, said block means engageable with said first end of the stop bar to limit outward movement of the second member relative to the first member, said second end of the stop bar engageable with the foot means to limit inward movement of the second member relative to the first member.

4,565,264
ELEVATOR SYSTEM
Kazushi Kunii, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1982, Ser. No. 452,051
Claims priority, application Japan, Jan. 7, 1982, 57-1292
Int. Cl.[4] B66B *5/16*
U.S. Cl. 187—89 **20 Claims**

1. An elevator apparatus for bringing an elevator cage in an elevator shaft to an emergency stop when the speed of descent of the elevator cage exceeds a predetermined rate, comprising:
a governor wire rope;
a governor mounted to a lower portion of the elevator shaft, said governor wire rope being reeved over said governor, said governor having means operative in response to vertical movement of said governor wire rope for detecting the speed of the cage and for grasping the governor wire rope when an abnormal ascending or descending speed is detected;
a guide wheel rotatably mounted to an upper portion of the elevator shaft above the lower portion;
a safety device for being mounted on the cage, including means for bringing the cage to an emergency stop when the descending speed of the cage exceeds said predetermined rate;
means, including an actuation mechanism coupled to said

safety device, for actuating said safety device to bring the cage to an emergency stop;

said governor wire rope having first and second free ends and being located in the elevator shaft reeved over said guide wheel and said governor, said rope being connected at said first free end to said actuation mechanism so as to move with the cage to operate said governor, said gover-



nor wire rope being adapted to be grasped by said governor to be stopped when said governor detects a speed in excess of said abnormal speed; and

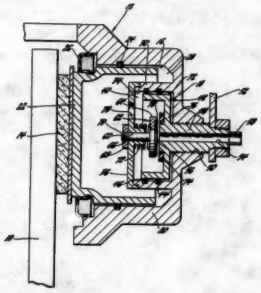
a tensioning means, disposed between said second free end of said governor wire rope and said actuation mechanism, for connecting said second free end and said actuation mechanism together and for tensioning said governor wire rope.

4,565,265

HYDRAULIC PARKING BRAKE

James M. Woolley, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 25, 1985, Ser. No. 695,198
Int. Cl.[4] F16D *55/26*; B60T *11/00*
U.S. Cl. 188—72.6 **2 Claims**



1. In a hydraulic pressure actuated wheel brake cylinder for disc brakes and the like, a hydraulic parking brake actuator comprising:

a housing having an actuating cylinder formed therein and having an end wall and a cylinder side wall;

a cup-shaped brake actuating piston reciprocably received in said cylinder and forming therewith a hydraulic pressure chamber in said cylinder and said piston;

a parking brake cylinder formed in said housing within said actuating cylinder and extending from said end wall and opening into said pressure chamber, a parking brake chamber being formed by said parking brake cylinder, said parking brake cylinder having a cap thereon separating said parking brake chamber from said pressure chamber and having an opening therein providing fluid communication between said chambers;

a parking brake piston reciprocably and rotatably received in said parking brake chamber and in sealing relation with said parking brake cylinder, said parking brake piston having a threaded shaft thereon and said end wall having a threaded opening therein through which said threaded shaft extends in threaded relation, a parking brake actuating lever secured to said shaft on the other side of said end wall from said parking brake chamber, said shaft and said parking brake piston having a passage formed therethrough with one end opening into said parking brake chamber and the other end having means for connecting a brake hose thereto to conduct hydraulic brake actuating fluid from and to a master cylinder to actuate and release the brake actuating piston for service braking;

an annular valve seat on said parking brake piston surrounding said passage one end;

a valve member reciprocably mounted on said cap and aligned for sealing engagement with said valve seat to selectively close said passage against fluid communication with said parking brake chamber, said valve member having spring means continuously urging it toward said valve seat and means limiting movement of said valve member toward said valve seat so that in the parking brake released position said valve is spaced from said valve seat to permit hydraulic fluid flow therepast;

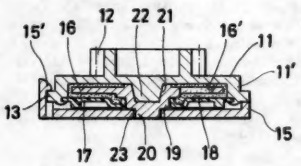
said parking brake piston being actuated by rotational movement of said shaft and moved axially by action of the threads to engage said valve seat with said valve member to trap hydraulic fluid in said chambers and with further movement to pressurize hydraulic fluid in said chambers and move said actuating piston to actuate said brake in a parking brake mode, and being released by opposite rotational movement of said shaft to release the hydraulic fluid pressure in said chambers and reopen said valve seat relative to said valve member.

4,565,266

OIL TYPE DAMPER

Nobuaki Omata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Apr. 30, 1984, Ser. No. 605,517
Int. Cl.[4] F16D *57/00*
U.S. Cl. 188—322.5 **3 Claims**



1. An oil type damper, comprising a blind cylindrical wall **15** formed integrally with a base having means **14** adapted to be secured to a given machine, a cap **11** set in place within said cylindrical wall **15** and retained rotatably therein, a seal disk **17** provided with a central hole, fixed integrally with said cap to cover the lower surface of said cap and adapted to form a housing in combination with said cap, and oil **18** filling the interior of said housing, said housing accommodating therein a stationary disk **16**, said stationary disk being provided with a shaft **20** adapted to restrain the rotation of said stationary disk relative to the rotation of said cap, and said shaft being extended outwardly through a central hole in said seal disk and non-rotatably connected to said base.

4,565,267

DIRECT-COUPLING CLUTCH CONTROL DEVICE FOR A TORQUE CONVERTER IN VEHICULAR AUTOMATIC TRANSMISSION

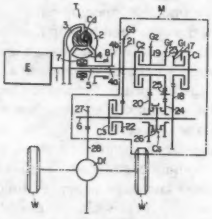
Masao Nishikawa, Tokyo, and Yoshimi Sakurai, Tanashi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,472

Claims priority, application Japan, Apr. 6, 1983, 58-60363

Int. Cl.[4] B60K *41/28;* F16H *41/18*

U.S. Cl. 192—3.31 **4 Claims**



1. In a direct coupling clutch control device for a torque converter in vehicular automatic transmission comprising; a fluid-type torque converter having an output member; an auxiliary transmission coupled to said torque converter and capable of selecting any of a plurality of multi-staged transmission gear ratios; a hydraulic direct-coupling clutch disposed between said input and output members and operable to mechanically couple said members to each other; a gear shift control means adapted to select any one of said transmission gear ratios in an automatic or manual fashion switched as required having an automatic gear shift position and a manual gear shift position; and a control means for controlling operation of said direct-coupling clutch, said direct-coupling control device is characterized in that said control means has such a variable characteristic with which the vehicle speed for starting to actuate said direct-coupling clutch is shifted with oil pressure to the lower speed side in accordance with an automatic gear shift position of said gear shift control means and to the higher speed side in accordance with a manual gear shift position thereof.

4,565,268

CLUTCH BRAKE MECHANISM FOR LAWN MOWER

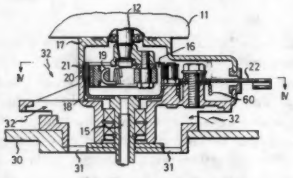
Masaru Yamamoto, Hyogo, and Tsuneyoshi Yuasa, Kakogawa, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 30, 1982, Ser. No. 431,419

Claims priority, application Japan, Oct. 6, 1981, 56-148974[U]

Int. Cl.[4] B60K *41/24;* F16D *67/02*

U.S. Cl. 192—0.049 **1 Claim**



1. A clutch brake mechanism for a lawn mower including an engine with an output shaft, a cover fixedly held relative to the engine, a driven shaft rotationally held by the cover and connected to the output shaft, cutter blades connected to the driven shaft, and an air impeller connected to the driven shaft above the cutter blades, comprising:

means for defining air passages situated in the center of the cover, said means rotationally supporting the driven shaft and having a plurality of air passages so that outer air is drawn into the inside of the cover by means of the air impeller for floating of the lawn mower,

a casing mounted between the means for defining air passages and the engine, the output shaft and the driven shaft extending into the casing,

a clutch situated in the casing and including a drum rotationally situated inside the casing and connected to the driven shaft, and at least two clutch shoes with a spring for urging the clutch shoes toward each other, said clutch shoes being connected to the output shaft of the engine so that when rotational speed of the output shaft increases, the clutch shoes move radially outwardly from the output shaft to contact the drum to thereby rotate the driven shaft,

brake means situated in the casing and having a brake band disposed outside the drum and an arm pivotally connected to the casing, one end of the brake band being attached to the casing and the other end being attached to the arm so that no matter how many times the brake means is actuated by means of the arm for controlling rotation of the drum, the brake means in the casing is always cooled by air flowing into the inside of the cover through the air passages to thereby efficiently prevent brake damages due to heat, and

a control lever including a brake arm connected to the arm of the brake means and a throttle arm connected to the engine for controlling rotational speed of the engine, said brake arm and throttle arm being linked together so that when the brake is applied to the drum, the engine operates at a minimum speed to thereby disengage the clutch shoes from the drum and to stop rotation of the drive shaft, and when the brake is not applied to the drum, the engine operates at at least a regular speed to thereby transfer rotational force of the engine to the driven shaft through the clutch.

4,565,269

HYDRAULICALLY OPERATED FRICTION CLUTCH

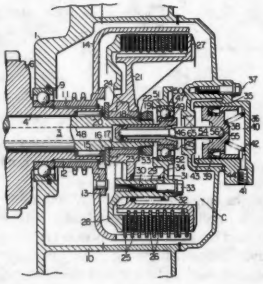
Hiroshi Kawasaki, and Kazuoki Ukiana, both of Tokorozawa, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,823

Claims priority, application Japan, Feb. 15, 1983, 58-20291[U]

Int. Cl.[4] F16D *13/72, 13/74, 25/08*

U.S. Cl. 192—70.12 **1 Claim**



1. A friction clutch assembly operating in an oil bath comprising:

(a) an outer clutch member having a cylinder open at one

end, partially closed at the other end and connectable at the partially closed end to a first tubular shaft;

(b) an inner cylindrical clutch member having a pressure receiving surface at one end thereof and being partially closed at the opposite end so as to engage a second tubular shaft concentric with and carried within said first shaft;

(c) a first friction means engaged with the inner surface of said outer member;

(d) a second friction means engaged with the outer surface of said inner member, and contactable with said first friction means;

(e) a pressure plate carried on said inner member and rotating axially with said inner member, having a pressing plate surface disposed at the end of said friction means opposite to the pressure receiving portion of said inner member;

(f) a plurality of springs engaging said inner member and said pressure plate so as to cause said pressure plate to be held against said friction means;

(g) a thrust bearing having an inner and an outer race, said outer race engaging a portion of said pressure plate;

(h) a pressure receiving member comprising a main body portion, a closed end portion projecting through said thrust bearing into a bore in said second shaft, and an open end portion for engagement in said inner race of said thrust bearing, wherein the inner surface of said closed end portion includes an hemispherical surface and the outer surface of said closed end portion has a diameter smaller than the diameter of said main body portion, said closed end portion including a plurality of passages extending therethrough;

(i) a push rod, having an end received into the hemispherical portion of said pressure receiving member, said push rod having an end formed into an hemisphere with a radius slightly smaller than that of the hemispherical portion of said pressure receiving member into which it is received, said push rod projecting through said open end of said pressure receiving member; and

(j) means for pushing said push rod against said pressure receiving means and engaging said push rod at the end opposite to that where said push rod engages said pressure receiving means,

wherein lubricating oil delivered through the center of said second tubular shaft passes through the space between said pressure receiving member and said bore in said second shaft, and further passes through said passages in said pressure-receiving member to provide an oil cushion between the end of said push rod and the hemispherical surface in said pressure-receiving member wherein the push rod is received.

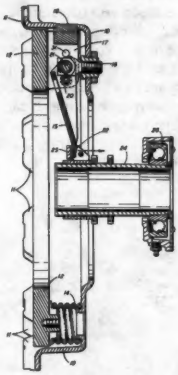
4,565,270

FRICTION CLUTCH CONVERTIBLE FOR EITHER PUSH-TYPE OR PULL-TYPE DISENGAGEMENT

John P. Yanko, Liverpool, N.Y., assignor to Lipe-Rollway Corporation, Syracuse, N.Y.

Filed Nov. 14, 1983, Ser. No. 454,890
Int. Cl.⁴ F16D *13/50*
U.S. Cl. 192—70.13 **5 Claims**

1. In a friction clutch for connecting driving and driven shafts; a dished cover member; a pressure plate located in the cover member; means biasing the pressure plate into engagement with a friction disc when the clutch is engaged; and means for moving the pressure plate out of engagement with the friction disc to disengage the clutch; said last-named means including a release lever pivotally connected adjacent one end to the cover member, an outwardly projecting lug on the pressure plate located adjacent the release lever pivot connection, and release lever connection means at alternate locations in the pressure plate lug, the release lever being adapted to be pivotally connected to the lug at one of said locations so that movement of the free end of the lever operates to move the plate out of engagement with the friction disc, a connection between the lever and lug at the first of said alternate locations requiring movement of the free end of the lever toward the pressure plate to disengage the clutch and a connection between the lever and lug at the second of said alternate locations



requiring movement of the free end of the lever away from the pressure plate to disengage the clutch.

4,565,271

OPERATING MEMBER FOR CLUTCH DIAPHRAGM SPRING, AND PROCESS FOR MOUNTING IT THEREON

Philippe Lassiaz, Boulogne, France, assignor to Valeo, Paris, France

Filed Sep. 23, 1983, Ser. No. 535,071
Claims priority, application France, Sep. 23, 1982, 82 16045
Int. Cl.⁴ F16D *13/44*
U.S. Cl. 192—89 B **15 Claims**

1. An operating member to be attached to the ends of the fingers of a diaphragm of a clutch, said operating member comprising in the form of a single piece, an annular support collar which extends substantially radially and which by one of its faces, referred to as support face, is adapted to come to bear against the ends of the fingers of the diaphragm to which it is to be fitted, and further comprising at least two retaining shoulders which are adapted to secure it axially to the diaphragm, wherein said retaining shoulders are turned axially in the direction of the support face of said support collar.

4,565,272

SELF-ALIGNING TYPE CLUTCH RELEASE APPARATUS

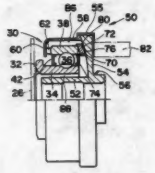
Takashi Miyahara, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1984, Ser. No. 576,403
Claims priority, application Japan, Feb. 12, 1983, 58-21843
Int. Cl.⁴ F16D *23/14*
U.S. Cl. 192—98 **9 Claims**

1. In a self-aligning type clutch release bearing apparatus including clutch release bearing means for releasing a clutch,

bearing holding means mounted substantially coaxially with and slidable along a rotational axis of the clutch for holding and guiding said bearing means, the bearing holding means being drivable by clutch actuating means, and a self-aligning coupling interposed between said bearing means and said bearing holding means for effecting aligning movement of said bearing means relative to said rotational axis of the clutch, the improvement wherein said self-aligning coupling comprises:

an aligning auxiliary member disposed between said bearing means and said bearing holding means, said auxiliary member having first and second faces which mate respectively with a portion of said bearing holding means and a portion of said bearing means;



first means for rendering said auxiliary member capable of aligning movement in all directions about a first point relative to said bearing holding means;

second means for rendering said bearing means capable of aligning movement in all directions about a different point relative to said auxiliary member; and

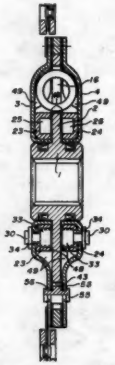
biasing means for retaining said auxiliary member in frictional engagement with said bearing means and said bearing holding means and for damping aligning movement between said bearing holding means and said auxiliary member and between said auxiliary member and said bearing means.

4,565,273

DAMPER DISK HAVING HYDRAULIC SHOCK ABSORBERS

Hiromi Tojima, and Kouji Kajitani, both of Hirakata, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Aug. 31, 1982, Ser. No. 413,251
Int. Cl.[4] F16D *3/66, 3/80*
U.S. Cl. 192—106.2 **5 Claims**



1. A damper disc comprising:

a spline hub;

a radial flange formed at the hub;

a sealed case having two halves covering the flange and having a radially outer portion to which a torque is transmitted;

torsion springs disposed in openings in the flange and axially faced hollws in the case for connecting the flange and the case together; and

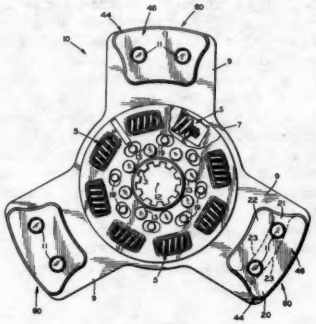
a piston cylinder mechanism disposed concentrically within the case and having a piston operable to move in accordance with relative torsion between the case and the flange, the case and a cylinder of the piston cylinder mechanism being filled with operating oil, and the cylinder being provided with only a narrow space through which the oil can be discharged and the cylinder being used exclusively as a hydraulic damper and having outer cylindrical walls separating said cylinder from said torsion springs, and said cylinder having an annular shape extending along a disc rotating direction and being arranged radially inside the torsion springs and between the case and the flange, an annular space in the cylinder is divided by partitions into several partially annular chambers in which the pistons are disposed respectively, the cylinder and partitions are fixed to one of the case and the flange, and the pistons in the cylinder are fixed to the other of the case and the flange.

4,565,274

FRICTION CLUTCH ELEMENT

Mick G. Cameron, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 30, 1983, Ser. No. 480,324
Int. Cl.[4] F16D *69/00*
U.S. Cl. 192—107 R **7 Claims**



7. A rotatable driven friction disc assembly comprising a pair of friction elements disposed on opposing sides thereof, each of said friction elements being disposed for mounting thereto, said disc having a center of rotation, each said element comprising an arcuate friction facing having radially extending leading and trailing edges, said facing having a first circumferentially extending centerline which defines an arc extending between said leading and trailing edges, said facing further having a radially outer and a radially inner subportion, each subportion radially spaced from said centerline, wherein said centerline is interjacently positioned with respect to said subportions, each subportion being both circumferentially and radially symmetrical and having second and third, respectively, circumerentially extending centerlines parallel to said interjacently positioned first centerline, said second and third centerlines of said respective subportions defining spaced arcs, each arc being coterminous with said radially extending edges of said facing at a point where two lines extending radially from said center of rotation intersect respective extremities of said subportions, said arc being defined by said second and third centerlines of said subportions extending over a greater angle than said arc defined by said interjacent first centerline, said radially outer and

inner subportions of said friction facings including convex radially extending leading and trailing edge portions, each of said edge portions positioned symmeterically about said centerline of one of said subportions, said friction facings further comprising concave radially extending leading and trailing edge portions positioned interjacent said respective convex edge portions, wherein said leading and trailing edges are continuously arcuate.

4,565,275

OPTOELECTRONIC COIN ENTRY SENSING SYSTEM FOR COIN OPERATED MACHINES

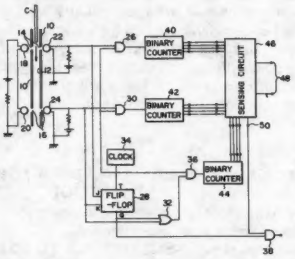
Takashi Hagiwara, Zama, Japan, assignor to Sigma Enterprises Incorporated, Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,192

Claims priority, application Japan, Dec. 15, 1982, 57-218328; Apr. 7, 1983, 58-59909

Int. Cl.⁴ G07F *3/02*

U.S. Cl. 194—97 R **6 Claims**



1. A coin entry sensing system for a coin operated machine, comprising:

(a) guide means defining a guideway for a deposited coin, the guide means having first and second pairs of opposed apertures spaced from each other in the longitudinal direction of the guideway;

(b) first and second light sources disposed exteriorly of the guide means;

(c) first and second photodetectors disposed exteriorly of the guide means and adapted to be normally irradiated respectively by the first and second light sources through the first and second pairs of apertures in the guide means, the deposited coin preventing the light sources from irradiating the photodetectors when traveling through the guideway past the apertures;

(d) a pulse generator for outputting clock pulses;

(e) first measuring means for measuring the period of time required for the coin to pass the first pair of apertures in the guide means, the first measuring means comprising first gate means coupled to the first photodetector and the pulse generator for selectively passing output pulses from the pulse generator and first counter means for counting the pulses that have passed the first gate means;

(f) second measuring means for measuring the period of time required for the coin to pass the second pair of apertures in the guide means, the second measuring means comprising second gate means coupled to the second photodetectors and a pulse generator for selectively passing out pulses from the pulse generator and second counter means for counting the pulses that have passed the second gate means;

(g) third measuring means responsive to both first and second photodetectors for measuring the period of time from the moment the coin starts passing the first pair of apertures to the moment the coin completes passing the second pair of apertures, the third measuring means comprising holding means for holding a signal output at the moment the coin starts passing the first pair of apertures until the moment the coin completes passing the second pair of apertures, third gate means coupled to the holding means and the post generator for selectively passing output pulses from the pulse generator, and third counter means for counting the pulses that pass the third gate means;

(h) sensing means responsive to the first, second and third measuring means for sensing whether the third measuring means for sensing whether the three measured periods of time are within predetermined limits respectively; and

(i) reverse motion detecting means responsive to the first and second photodetectors for detecting a reverse travel of the coin through the guideway.

4,565,276

AUTOWALK

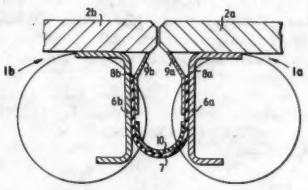
Bernd Dengs, Heiligenhaus, Fed. Rep. of Germany, and Neil Dyson, Bradford, Great Britain, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Apr. 1, 1983, Ser. No. 481,282

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3213322

Int. Cl.⁴ B66B *9/12*

U.S. Cl. 198—321 **23 Claims**



1. An autowalk comprising

a plurality of individual step segments including step plates disposed with a gap between one another in a continuous arrangement defining an upper course adapted to carry people and a lower return travel course under said upper course, the step plates in the upper course being substantially at a comb mesh level in one horizontal plane,

an elastic bridge respectively arranged between every two adjacent of said step segments bridging said gaps between said step plates respectively,

each said bridge being below the comb mesh level when respective adjacent steps are in said upper course, said elastic bridge having means on said bridge and adjacent each lateral side thereof to prevent debris from spilling out sidewise, said bridge and said means forming a debris-catching pocket opening into said gap for catching the debris when it is in said upper course and said pocket being positioned so as to discharge the debris from said pocket at a predetermined position substantially where said upper course and said pocket turn upside down into said lower course.

4,565,277

DOUGH TRAY FOR A PRE-PROOFER

Johan Benier, Vught, Netherlands, assignor to Benier B.V., Netherlands

Filed Jul. 9, 1980, Ser. No. 166,920

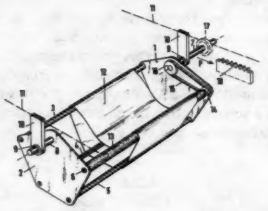
Claims priority, application Netherlands, Jul. 13, 1979, 7905494

Int. Cl.⁴ B65G *47/42*

U.S. Cl. 198—365 **6 Claims**

1. A dough tray for a proofer comprising two head walls with means for coupling the dough tray to a transport means for transporting a plurality of dough trays through the proofer and a carrier frame means comprising at least two frame portions extending between the head walls for supporting at least

one endless strip of cloth, and an endless strip of cloth mounted on said carrier frame means including a part for receiving dough lumps sagging between said two frame portions of the



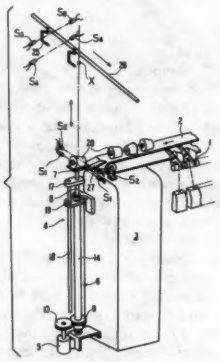
carrier frame means, the improvement wherein positive drive means are provided for selectively displacing the cloth over said carrier frame means for selectively rolling the dough lumps on said endless cloth.

4,565,278

METHOD OF TRANSFERRING YARN PACKAGES

Isao Asai, Toyota; Shigeru Muramatsu, Okazaki; Takayuki Morita, and Akira Tanaka, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 9, 1983, Ser. No. 492,682
Claims priority, application Japan, May 12, 1982, 57-078097
Int. Cl.[4] B65G *47/24*
U.S. Cl. 198—400 **4 Claims**



1. A method of transferring sequentially aligned doffed yarn packages from a first movable conveyor mounted on and along the length of a yarn spinning machine onto a second movable conveyor, disposed at a skewed angle with respect to said first conveyor, for conveying the yarn packages away from said spinning machine on, and in the direction of movement of said second conveyor, each said yarn package having first and second ends and including a hollow cylindrical core extending therebetween, and said yarn packages on said first conveyor having their said ends randomly oriented in oppositely facing directions with their said cores aligned in the direction of movement of said first conveyor, comprising the steps of:

providing a means for identifying at least one of said ends of each of said sequentially aligned yarn packages for distinguishing the respective of said first ends from said second ends of said yarn packages;

moving said first conveyor to deposit one of said yarn packages onto a package turning means with said core of the package continuing to be so aligned and leaving said core free and clear, and then stopping said first conveyor movement;

sensing said end-identification means on said yarn package while on said package turning means to detect which of its said ends is facing said first conveyor;

actuating said package turning means responsive to said sensing to pivot and angularly displace said yarn package thereon towards a selected one of two opposite directions, depending upon which of its said two ends is facing said first conveyor, to face its said first end in one of said opposite directions;

removing said yarn package from said package turning means onto said second conveyor with its said first end facing in said one direction using the movement of said second conveyor to cause a hook thereof to enter and engage said package core;

again sensing said yarn package to detect its presence on said second conveyor;

and again moving said first conveyor responsive to the last said sensing to deposit the next sequential yarn package from said first conveyor onto said package turning means;

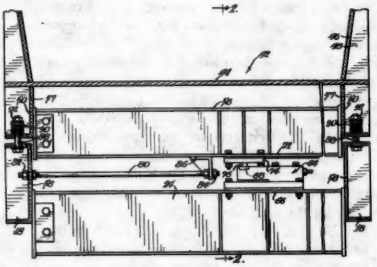
and repeating said steps sequentially with respect to each of said sequentially aligned yarn packages, whereby each of said packages is turned in one or the other of said two opposite directions, and all of said first ends of the sequentially transferred packages are oriented in said one direction on said second conveyor.

4,565,279

PRODUCT ACCUMULATING CONVEYOR APPARATUS AND METHOD

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Continuation of Ser. No. 272,909, Jun. 12, 1981, abandoned, and a continuation of Ser. No. 582,859, Feb. 24, 1984, abandoned.
This application Oct. 3, 1984, Ser. No. 657,050
Int. Cl.[4] G01G *11/08*
U.S. Cl. 198—505 **5 Claims**



1. In a accumulating conveyor for conveying and cooling castings comprising a base, an elongated conveyor having a conveying surface, and drive means for vibrating said conveyor on said base for moving said castings along said conveying surface, the improvement comprising: an accumulating hopper defining a loading portion of said elongated conveyor, weight responsive means for weighing the castings fed to said accumulating hopper, said accumulating hopper being attached at one end portion to said conveyor in cantilever fashion and being supported at an inlet end portion on said weight responsive means, said weight responsive means starting and stopping said drive means for vibrating said conveyor, means extending transverse to the direction of conveyance of material on said conveyor and resiliently connecting the inlet end of the hopper to the conveyor to prevent side-to-side movement of the hopper during vibration, said drive means being activated upon the weight of the castings on said hopper reaching a predetermined amount for deflecting said accumulating hopper about said attached end portion an amount sufficient to

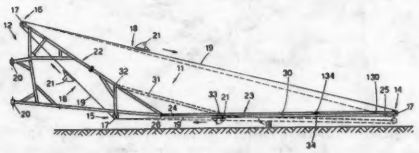
be sensed by said weight responsive means for conveying the castings along the hopper and along the conveyor, and said drive means being deactivated upon the weight responsive means sensing the weight of the castings on said hopper falling below a predetermined amount whereby the accumulating hopper undeflects an amount sufficient to be sensed by said weight responsive means whereby the vibration of the conveyor is stopped.

4,565,280

BUCKET CONVEYOR

Luigi Zaccaron, Via dei Colli, 2, 33030 Moruzzo (UD), Italy

Filed Jun. 14, 1983, Ser. No. 504,175
Int. Cl.⁴ B65G *41/00*
U.S. Cl. 198—509 **4 Claims**



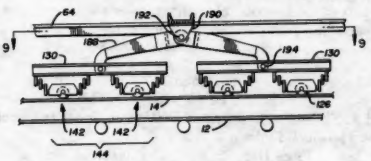
1. Bucket conveyor to load heaped aggregate materials from a plane on which the heap lies onto another higher plane, comprising a framework revolvably anchorable at one end along a vertical axis to an apparatus which receives aggregate, consisting of a substantially triangular metallic structure bearing two pairs of pulleys and of a metallic boom or extension which bears at a free end a pair of pulleys farthest from the zone of discharge of the buckets, said triangular structure and extension being connected together at one end with a hinge having its axis perpendicular to a plane which contains the framework, said hinge being positioned between said pulleys on said extension and on said triangular structure; a length of chain; junction links and buckets positioned on said chains around said pairs of pulleys, said chain forming a catenary between two pairs of pulleys further including screws wherein the height of the free end of the extension and of the pair of pulleys solidly fixed to that end above the ground can be adjusted with said screws to move the pair of pulleys lengthwise in relation to the extension.

4,565,281

PRESSURE DEVICE FOR CONVEYOR

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 17, 1983, Ser. No. 524,059
Int. Cl.⁴ B65G *15/14*
U.S. Cl. 198—628 **4 Claims**



1. For use in a high angle conveying apparatus having a conveyor belt and a cover belt trained for movement in endless configurations through a lifting zone whereat said belts are moved into operative association with each other so that material on said conveyor belt will be held in contact therewith by said cover belt, improved pressure means for applying essentially fully equalized pressure to the back surface of said cover belt including:

(a) A plurality of modules of rollers,

(b) at least one row of rollers mounted within each of said modules, each row of rollers positioned to contact the back surface of the cover belt along a line transverse to the direction of movement of the cover belt, each said row of rollers comprising a plurality of freely rotatable individual rollers contacting the cover belt across the major extent of the line across the cover belt, with each roller being on an individually moveable axis of rotation to permit conformance of each roller to the cover belt independent of its adjacent roller,

(c) a plurality of support means each coupled at a first end to a single coaxial pivot point on a framing member of the conveying apparatus and at a second end to one of said modules, and

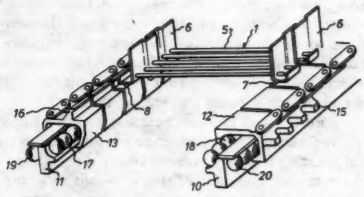
(d) resilient means to spring bias said plurality of support means with respect to each other toward the cover belt, whereby each said row of rollers is urged into contact with the back surface of the cover belt for applying essentially fully equalized pressure thereto.

4,565,282

STORING INSTALLATION FOR CARRYING A NUMBER OF PILED HELICALLY EXTENDING TURNS OF AN ENDLESS CONVEYOR BELT

Lennart Olsson, Nyhamnsläge, and Gerald Heber, Helsingborg, both of Sweden, assignors to Frigoscandia Contracting AB, Helsingborg, Sweden

Filed Nov. 22, 1983, Ser. No. 554,345
Claims priority, application Sweden, Nov. 26, 1982, 8206759
Int. Cl.⁴ B65G *21/18*
U.S. Cl. 198—778 **7 Claims**



1. Supporting installation for carrying a number of helically extending turns of an endless, sidewise collapsible conveyor belt, laid upon one another in a pile, where the various belt turns in the pile are supported by one another especially by means of spacing members arranged adjacent the belt edges, said installation comprising an endless conveyor unit which both carries and drives the pile of helically extending conveyor belt turns, wherein the conveyor unit comprises:

(A) two endless chains which are arranged under the belt pile and support the two edge portions of the belt throughout at least one complete revolution,

(B) a support under each of said endless chains and having an upwardly directed rolling race, and

(C) at least one endless rolling element series arranged between each chain and the rolling race of its support, and

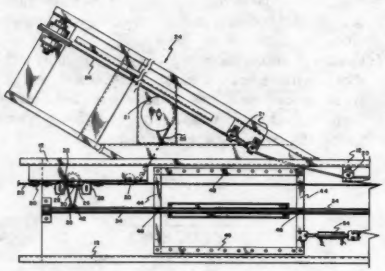
wherein each of said chains comprises links forming with its support a channel enclosing rolling elements in one of said rolling element series and extending at least through the support length of the belt.

4,565,283

MEANS AND PROCESS FOR EXTRACTING POWER FROM A PASSING CABLE

Fred S. Greenlee, III, Wichita, Kans., assignor to Great Plains Ventures, Wichita, Kans.

Filed Mar. 26, 1984, Ser. No. 593,680
Int. Cl.[4] B65G *13/07*
U.S. Cl. 198—790 11 Claims



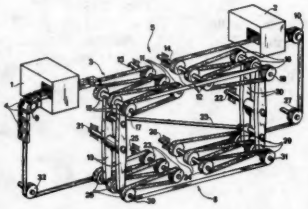
1. In an improved combination of a conveyor system and a transferring conveyor system having transferring roller means for transferring articles from the conveyor system to a branch conveyor system having a plurality of rotatable branch sheaves and the conveyor system being of the type having a plurality of carrier rollers rotatably connected to a pair of support members and a conveyor cable drive means mechanically communicating with the branch conveyor system and the conveyor system including a plurality of idle sheaves rotatably connected to said support members underneath the carrier rollers and an endless cable positioned over the plurality of idle sheaves and branch sheaves and engaged with the conveyor cable drive means, said improvement comprising at least two guide sheave means rotatably secured within the conveyor system in general proximity to each other and essentially in the same plane; at least one take-off sheave means rotatably positioned within the conveyor system between said two guide sheave means and essentially in the same plane of said guide sheave means such that when said endless cable movably passes between the two guide sheave means and the take-off sheave means, the take-off sheave means essentially detours the generally straight-line path of the endless cable to frictionally pinch the cable in order that rotational power is imparted to the take-off sheave; at least one drive sheave means concentrically integrally bound to the at least one take-off sheave such that the drive sheave means and the take-off sheave rotate in unison; a drive shaft means rotatably positioned within the conveyor system underneath said transferring conveyor system; at least one power take-off endless belt interengaging the at least one drive sheave means and the drive shaft means to transmit rotary power from the drive sheave means to the drive shaft means; and at least one accessory endless belt interconnecting at least one of the transferring roller means of the transferring conveyor system and the drive shaft means to transmit rotary power from the drive shaft means to the at least one transferring roller means of the transferring conveyor system.

4,565,284

APPARATUS FOR TRANSFERRING INDIVIDUAL OR BATCH FORMED PRODUCTS FROM A FIRST TO A SECOND MACHINE

Enzo Seragnoli, and Gastone Dall'Osso, both of Bologna, Italy, assignors to G.D. Societa per Azioni, Bologna, Italy

Filed Mar. 16, 1983, Ser. No. 475,743
Claims priority, application Italy, Apr. 13, 1982, 3396 A/82
Int. Cl.[4] B65G *23/00*
U.S. Cl. 198—792 4 Claims



1. Apparatus for transferring individual or batch formed products from a first to a second machine comprising:

at least one continuous conveyor that issues from the first machine, enters the second machine, and issuing from this returns back to the first machine; said conveyor being connected, movement wise, to powering means that are independent of one another and are connected to the first and to the second machine, respectively, in order to carry in motion said conveyor, in the normal operating condition, at the same speed as the machines themselves; said conveyor having two sections of variable length, a first placed between the exit point of the first machine and the entry point of the second machine, and a second between the exit point of the second machine and the entry point of the first machine; said sections being partially wound, with a plurality of turns, respectively, onto first and second intermediate elements, the first intermediate elements situated between the exit point of the first machine and the entry point of the second machine, and the second intermediate elements between the exit point of the second machine and the entry point of the first machine; a first part of said first and second elements being mounted on fixed spindles supported by the frame of the apparatus, and a second part of said first and second elements being mounted on movable spindles parallel to said fixed ones, supported in such a way as to be able to approach or move away from said fixed spindles to suit the tension of said conveyor due to the slowing down or the temporary halting of one of the two machines; the movable spindles of said first and second elements being interconnected so that if said second part of said first elements approaches, to a given extent, the corresponding first part, the second part of said second elements moves away from the corresponding first part, to the same extent, and vice versa.

4,565,285

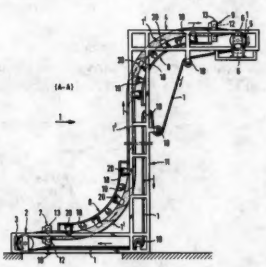
TUBE BELT CONVEYOR

Pauli A. T. Koistinen, Joensuu, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Dec. 15, 1983, Ser. No. 562,395
Claims priority, application Finland, Jan. 4, 1983, 830012
Int. Cl.[4] B65G *15/08*
U.S. Cl. 198—819 7 Claims

1. A tube belt conveyor, comprising first and second drum members respectively defining a load end and a discharge end of a conveyor path, an endless flexible belt trained about said drum members, that portion of the belt that extends along the conveyor path having first and second major faces and being helically twisted so that said portion of the belt can be formed

into a tube with said first major face inwards and an edge region of said portion of the belt overlapping said second major face and extending along a generally helical line through at least one complete revolution from said loading end to said discharge end, and the conveyor also comprising means for



driving at least one of said drum members to rotate and drive the belt along the conveyor path in the direction from the loading end to the discharge end, and means at the loading end of the conveyor path for maintaining the twisted portion of the belt in tubular form.

4,565,286

SUPPORTING TUBE OF A STEEP-RISE CONVEYOR, ESPECIALLY A VERTICALLY ELEVATING CONVEYOR, OR A DOWN-FEED DEVICE

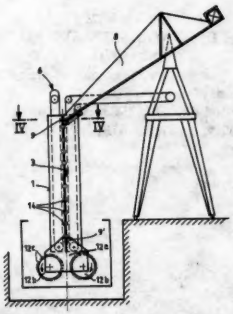
Gert Bechtloff, Hamburg, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 380,083, May 20, 1982, abandoned. This application Dec. 7, 1984, Ser. No. 679,596

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120056

Int. Cl.[4] B65G *21/10*

U.S. Cl. 198—861.1 **8 Claims**



1. A supporting arrangement for bulk material handling and distribution comprising:

a hollow supporting tube having a body including side configuration and opposite open ends;

a conveyor mounted in said tube with at least a portion of said conveyor connected to said tube;

means forming a slit with edges along said side configuration of said tube and extending between said opposite open ends of said tube; and

means to cause relative rotation of said ends of said tube relative to each other by displacing one of said edges of the slit substantially parallel to the other of said edges; said relative rotation of said tube ends causing relative rotation of said one conveyor portion relative to the remaining conveyor portion.

4,565,287

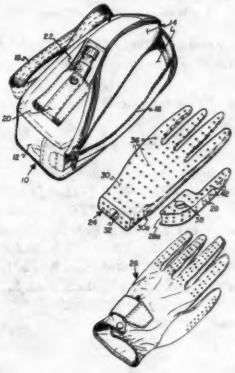
APPARATUS FOR PRESERVATION OF A LEATHER GLOVE

Hector Rede, 634 Cougar Loop NE., Albuquerque, N. Mex. 87122; Armand G. Winfield, and Barbara L. Winfield, both of Santa Fe, N. Mex., assignors to Hector Rede, Albuquerque, N. Mex.

Filed Jun. 11, 1984, Ser. No. 619,615

Int. Cl.[4] B65D *81/26*

U.S. Cl. 206—213 **8 Claims**



1. An apparatus for preserving a leather glove, comprising a closable protective case having a porous inner lining suitable for impregnation with a leather emollient, and a hollow vapor-permeable hand-shaped form adapted to fit within a leather glove and contain a dehydrating agent, said hand-shaped form consisting of separable thumb and hand parts, each of said parts being hollow and permeable to water vapor, and wherein said case is sized to cooperably receive and enclose a glove containing said form, whereby during storage in said case moisture in a glove is extracted by action of said dehydrating agent in said hand-shaped form and said leather emollient is at the same time infused into said glove.

4,565,288

TUBULAR CONTAINER FOR THE ACCEPTANCE OF SEMICONDUCTOR COMPONENTS

Albert Walther, Holzkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,540

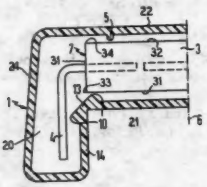
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323589; Feb. 8, 1984, 3404467

Int. Cl.[4] B65D *85/42, 65/18*

U.S. Cl. 206—328 **11 Claims**

1. A tubular container having at least one external wall with a pair of inner leg portions extending from a bight portion to form a hollow cavity with a U-shaped cross-section for loosely receiving and storing at least one component which has a housing with housing surfaces forming housing edges extending in the longitudinal direction of the container, said component being a dual-in-line component with terminals extending outward from the opposite end surfaces and being bent to provide a U-shaped configuration similar to the cross-section of the container, said container having means for protecting the component contained therein from electrostatic charging and discharging, said means including means to prevent fric-

tional engagement of the housing surfaces on an interior wall surface of the bight portion, said means for preventing including a longitudinally extending rail adjacent each corner of the bight portion and an inner leg portion, said rail extending into



the cavity and having a glide edge facing the terminals to keep them from engaging the inner leg portion and a glide edge facing the housing of the component to prevent frictional engagement of the surface of the bight portion with the housing surface.

4,565,289

METHOD AND APPARATUS FOR LOADING TUBULAR OBJECTS

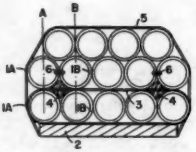
Pierre Lesueur, Vaux le Penil, France, assignor to Everitube, Courbevoie, France

Filed Nov. 30, 1984, Ser. No. 676,898

Claims priority, application France, Dec. 2, 1983, 83 19703

Int. Cl.[4] B65D *85/20*

U.S. Cl. 206—443 **10 Claims**



1. A method for assembling a bundle of tubular pipes, comprising the steps of:

(a) laying a first bed of a number (p) of pipes (1) laterally across spaced support beams (2),

(b) banding (3) the first bed to the beams,

(c) placing key blocks (4) between at least two outermost pipes on each side of and atop the first bed,

(d) laying at least one intermediate bed of a number (p) of pipes on top of the first bed in vertical columns,

(e) clamping together adjacent ends of two outermost pipes on each side of the intermediate bed flanking the key blocks, and

(f) laying an upper bed of a number (p − 1) of pipes on top of an uppermost intermediate bed in a staggered arrangement with each upper bed pipe resting between two columns of underlying pipes.

4,565,290

DISPLAY RACK

James L. Corrigan, Lancaster, and Gerard M. Schouten, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 14, 1984, Ser. No. 609,998

Int. Cl.[4] A47G *19/08*

U.S. Cl. 211—41 **4 Claims**

1. A flat display assembly comprising:

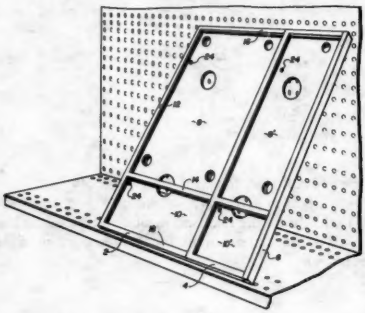
(a) a first part having at least two recessed display surfaces with each surface having three raised border means,

(b) a second part forming the fourth raised border means for each recessed display surface,

(c) said first and second part being made of a self-supporting material,

(d) said first part having two recessed areas, one area being large enough to hold a sample floor tile and the other area being substantially smaller to hold descriptive material on the floor tile,

(e) said first part having a raised border means on three sides thereof, and a raised border means extending across said first part parallel to the two raised border means, said last mentioned raised border means defining said two recessed areas, each having three raised sides formed by said raised border means,



(f) said first part, having a fourth side thereof that does not have a raised border means, having a tab means extending along the entire length of said fourth side and said tab means having there along means for receiving and holding said fourth raised border means in position, and

(g) said second part being a strip affixed to the tab means of the first part to form the fourth raised border means so that both recessed areas have raised sides completely thereabout.

4,565,291

HYDRAULIC LIFTING ASSEMBLY FOR MOUNTING A CRANE JIB

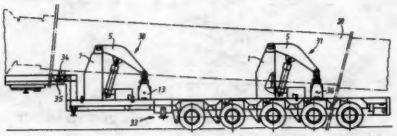
Prabhakar R. Khirwadkar, Siechenreuteweg 20, 8940 Memmingen, Fed. Rep. of Germany

Filed Apr. 27, 1983, Ser. No. 489,144

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1982, 3215635

Int. Cl.[4] B66C *23/36*

U.S. Cl. 212—180 **8 Claims**



1. A hydraulic lifting assembly for direct mounting of a crane jib from a flat bed transport vehicle on which the crane jib is carried, the longitudinal axis of the crane jib and the bed of the transport vehicle both extending substantially horizontally in a direction from the front to the rear of said vehicle, said assembly comprising a front and a rear lifting provision on the bed of said transport vehicle spaced from each other in said longitudinal direction, each of said lifting provisions comprising:

left and right vertical base frames supported on the bed of

said transport vehicle and spaced from each other transversely to said longitudinal axis;

left and right lift arms, one end of each lift arm being pivotally attached to the upper end of the corresponding base frame;

a rigid cross-frame;

means for pivotally coupling the opposite ends of said cross-frame to the free ends of said left and right lift arms, respectively, thereby pivotally coupling the free ends of said lift arms to each other; and

left and right hydraulically controlled lifting devices respectively connected between the corresponding base frames and lift arms and adapted to elevate the free ends of said lift arms to independently controllable elevations; and at least one of said lifting provisions further comprising a support table mounted on the cross-frame thereof for supporting the end of said crane jib at the corresponding end of said transport vehicle;

whereby said crane jib may be controllably tilted and elevated with respect to said transport vehicle and pivoted with respect to said longitudinal axis.

4,565,292

CARGO HANDLING APPARATUS WITH A CARGO BOOM WHICH CAN BE SWUNG IN A SWIVEL BEARING BETWEEN TWO KINGPOSTS

Heinz F. J. Spengel, Sr., Hamburg, Fed. Rep. of Germany, assignor to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

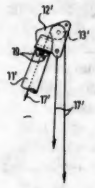
PCT No. PCT/EP81/00008, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02152, PCT Pub. Date Aug. 6, 1981

Continuation of Ser. No. 306,922, Sep. 21, 1981, abandoned. This PCT application Jan. 23, 1981, Ser. No. 700,332

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002464

Int. Cl.⁴ B66C *23/06, 23/52*

U.S. Cl. 212—232 **3 Claims**



1. In a cargo handling apparatus comprising first and second kingposts arranged spaced apart from one another in a plane; a swivel bearing disposed between said kingposts; a cargo boom having upper and lower ends and pivotably mounted at its lower end on said swivel bearing; first and second span tackles extending between said upper end of said cargo boom and said first and second kingposts, said cargo boom being capable of being swung through said plane between said kingposts from a first working position on one side of said kingposts to a second working position on the other side of said kingposts; a main hoist carried by said cargo boom, said main hoist including main hoist fittings mounted on said cargo boom at its upper end; a first extension fixedly connected to the upper end of said cargo boom and projecting beyond said main hoist fittings and having a longitudinal axis and an upper end; a first auxiliary hoist carried by the upper end of said first extension, said first auxiliary hoist comprising a block fitting rotatable about said longitudinal axis of said first extension, an upper cargo block carried by said block fitting, a guide sheave and cable sheaves arranged on said upper cargo block eccentrically of said longitudinal axis, and a lower cargo block having a lower edge, said block fitting of said first auxiliary hoist being spaced from said main hoist fittings so that, in an approximately vertical position of said cargo boom and in a raised position of said auxiliary hoist said auxiliary hoist rotates about said first extension and said lower edge is free of said main hoist fittings: the improvement comprising: a second extension of said cargo boom, said second extension having upper and lower ends, the lower end of said second extension being fixedly connected to said block fitting of said first auxiliary hoist so as to be rotatable therewith about said axis; and a second auxiliary hoist carried by said upper end of said second extension, said second auxiliary hoist comprising a block fitting and upper and lower cargo blocks, said lower cargo block of said second auxiliary hoist having a lower edge; in a raised position of said lower cargo block of said second auxiliary hoist adjacent said upper cargo block of said second auxiliary hoist and in an approximately vertical position of said cargo boom, said lower edge of said lower cargo block of said second auxiliary hoist being free of the block fitting of said first auxiliary hoist, whereby said block fitting of said second auxiliary hoist is rotated with said block fitting of said first auxiliary hoist around said cargo boom when said cargo boom is swung through said plane from one of said working positions to the other said block fitting of said second auxiliary hoist being rotatably connected to said upper end of said second extension for restricted angular rotating movement around said second extension and stoppers mounted on said second extension to restrict said rotating movement.

4,565,293

CONTAINER CLOSURE

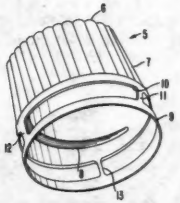
Thomas S. Jonas, Harefield, United Kingdom, assignor to National Plastics Limited, Colchester, England

Filed Jul. 12, 1984, Ser. No. 630,214

Claims priority, application United Kingdom, Jul. 19, 1983, 8319444

Int. Cl.⁴ B65D *41/34*

U.S. Cl. 215—246 **7 Claims**



1. A pilfer-proof closure for a container having a screw-threaded neck and an outwardly extending flange means below the screw-thread, said closure comprising:

(a) a closure body having an end wall and a side wall depending from said end wall and internally screw-threaded,

(b) an annular tamper-evident band of heat-shrinkable material attached to said side wall,

(c) a small number of spaced-apart bridge members attaching said tamper-evident band to said depending side wall,

(d) said bridge members being long enough to locate said tamper-evident band below said flange means on the container neck,

(e) said band, when heat-shrunk adopting a generally polygonal non-circular shape wherein the sides of the polygon extend between said bridge members and engage under the outwardly extending flange means on the container.

4,565,294

TAMPER EVIDENT CONTAINER SHROUD

Moe S. Smith, 320 Ridelle Ave., Suite 802, Toronto, Ontario, Canada (M6B 4B4)

Continuation-in-part of Ser. No. 583,244, Feb. 23, 1984, abandoned, which is a continuation-in-part of Ser. No. 504,211, Jun. 13, 1983, abandoned. This application Feb. 15, 1985, Ser. No. 704,971

Int. Cl.[4] B65D *41/46*

U.S. Cl. 215—251 19 Claims

1. For use with a moulded plastic or glass container having a mouth with an outwardly protruding peripheral ridge and a closure for the mouth, a shroud moulded of ultra high-flow low-density polyethylene resin that can, upon heating, be pushed onto the container over the closure to encase the closure, the shroud having a cup-shaped body portion and a resilient rim portion of generally circular cross-section which can be pushed over the ridge of the container with the body portion free of contact with the closure located within the shroud, the shroud having a relatively weak portion between its body and its rim portions, the resistance of the weak portion to tearing being less than the resistance of the rim portion to being pulled, after cooling, back over the ridge of the container whereby access to the closure cannot be had without visibly tearing the weak portion of the shroud.

4,565,295

PLASTIC CONTAINER CLOSURE HAVING PILFERPROOF CHARACTERISTICS

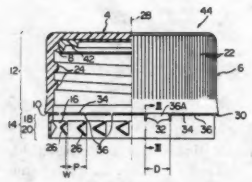
Fumio Mori, Yokohama; Junichi Itsubo, Hiratsuka; Isao Ichinose, Hiratsuka; Katsuake Tanaka, Hiratsuka; Osamu Ishii, Chigasaki, and Takashi Yazaki, Hiratsuka, all of Japan, assignors to Japan Crown Cork Co Ltd., Tokyo, Japan

Filed Dec. 14, 1984, Ser. No. 681,480

Claims priority, application Japan, Jul. 6, 1984, 59-138904

Int. Cl.[4] B65D *41/34*

U.S. Cl. 215—252 6 Claims



1. A pilferproof plastic closure for a container including a mouth-neck portion having an external thread formed on its peripheral surface and an engaging jaw portion located beneath the external thread, said closure comprising a top panel wall and a cylindrical skirt wall extending downwardly from the peripheral edge of the top panel wall, said skirt wall having a circumferentially extending weakening line formed therein and being divided into a main portion above the circumferential weakening line and a pilferproof bottom portion beneath the circumferential weakening line, said main portion having formed on its inner surface an internal thread to be screwably fitted with the external thread of the mouth-neck portion of the container and said pilferproof bottom portion having formed on its inner surface a plurality of radially inwardly projecting and circumferentially spaced engaging flaps, wherein each of said flaps has a base edge; wherein an axial breaking line is formed in the pilferproof bottom portion extending downwardly from the upper end of the pilferproof bottom portion but being non-existent in at least a greater portion of the lower part of the pilferproof bottom portion, and at least a greater portion of the base edge of each of the engaging flaps is positioned in said lower part of the pilferproof bottom portion in which the axial breaking line does not exist.

4,565,296

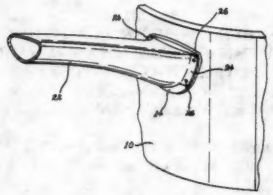
COOKING PANS

Yanta Lam, Kwun Tong, Hong Kong, assignor to Meyer Manufacturing Company Limited, Kowloon, Hong Kong

Filed Jul. 25, 1984, Ser. No. 634,347

Int. Cl.[4] B65D *25/28*

U.S. Cl. 220—94 R 8 Claims



1. A cooking pan having at least one handle comprising a bowl of a first metal, a handle at least the inner end of which is of a second metal which is a material not readily weldable to said first metal, an outwardly projecting stud adhered to said metal bowl, said stud having a transverse cross section which is non-circular and a longitudinal axis, a metal patch of a material readily weldable to said second metal, an opening through said patch of a shape and size to fit over said stud and be mechanically held non-rotatably relative said longitudinal axis of said stud, said patch being held in face to face contact with the bowl with the stud passing through said hole and the outer end of said stud riveted over to hold said patch in place in face to face contact with the bowl, and said inner end of said handle being joined to said patch by welding.

4,565,297

HIGH-PRESSURE VESSEL WITH INNER CLOSURE

Jorg-Peter Korner, Hagen, and Herbert Jekat, Trostberg, both of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 522,594, Aug. 12, 1983, abandoned. This application Feb. 1, 1985, Ser. No. 697,428

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1982, 3230457

Int. Cl.[4] B65D *45/00, 53/02*

U.S. Cl. 220—254 7 Claims

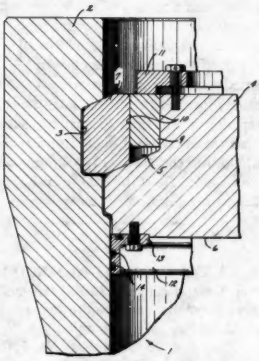
1. A high-pressure vessel with an inner closure, the closure comprising:

a. a cover having an upwardly facing frustum-shaped surface;

b. a plurality of supporting segments defining a multiple part ring adapted to be received within a recess formed in the inner surface of the high-pressure vessel and having downwardly facing frustum-shaped surfaces contacting the upwardly facing frustum-shaped surface of said cover;

c. locking means mounted on said cover for maintaining said

supporting segments within said recess formed in the inner surface of the high-pressure vessel; and



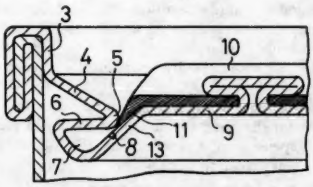
d. a seal disposed at the bottom of said cover for sealingly engaging the inner surface of the high-pressure vessel and the bottom of said cover.

4,565,298

SAFE OPENING CONTAINER LID

Keiji Taniuchi, 6-7, Nishi-Koujiya 2-Chome, Ota-ku, Tokyo 144, Japan

Filed Feb. 6, 1985, Ser. No. 698,704
Claims priority, application Japan, Mar. 30, 1984, 59-60993
Int. Cl.⁴ B65D *41/32*
U.S. Cl. 220—273 **7 Claims**



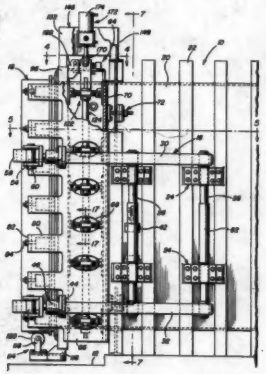
1. A safe opening container lid, comprising: a central plate portion (**9**; **27**) of a lid main body (**1**), a finger tab (**10**; **28**) fixed to the plate portion such that tip (**11**; **29**) of said tab is positioned at a tear line (**8**; **26**), said lid main body having formed thereon a lip bead (**3**; **21**) for engaging a rim of a container, an inclined portion (**4**; **22**) sloping obliquely downwardly inside said container, and a loop portion (**7**; **25**) bent outwardly from an innermost peripheral edge (**5**; **23**) of said inclined portion and returning back to a position slightly radially outside the innermost peripheral edge, said central plate portion continuing from an inner edge of said loop portion across said tear line and adapted to be separated therefrom by the rupture of said tear line.

4,565,299

PRESSURE SEALING CLOSURE SYSTEM FOR RETORT VESSELS

Leroy C. Trumbo, and Robert L. Feasel, both of Memphis, Tenn., assignors to Trumbo Welding & Fabricating Company, Inc., Memphis, Tenn.

Filed Feb. 20, 1985, Ser. No. 703,499
Int. Cl.⁴ B65D *88/44*
U.S. Cl. 220—323 **22 Claims**



1. In combination with a vessel having an open end and a door adapted to be displaced between an open position and a closed position sealing the open end of the vessel, the improvement comprising means mounting the door on the vessel for pivotal displacement about a pivotal axis between said open and closed positions and linear displacement parallel to said pivotal axis between raised and lowered positions, locking means for clamping the door to the vessel only in the closed position thereof, power operated means connected to the door and to the locking means for effecting said linear displacement and clamping of the door to the vessel, and control means operatively connected to the power operated means for limiting said clamping of the door to the lowered position thereof.

4,565,300

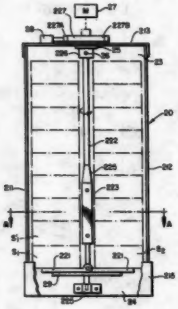
DISPENSING MECHANISM FOR VENDING MACHINES OR THE LIKE

Yoshikazu Kokubun, and Osamu Anazawa, both of Gunma, Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Dec. 8, 1983, Ser. No. 559,234
Claims priority, application Japan, Dec. 8, 1982, 57-215087
Int. Cl.⁴ B65G *59/06*; G07F *11/24*
U.S. Cl. 221—116 **8 Claims**

1. In an article dispenser for vending machines including an article storage area for holding articles in a stacked disposition, a rotatable shaft extending vertically within said storage area, said storage area having a bottom opening through which the articles are dispensed and a front opening through which articles can be loaded into said storage area to form first and second vertical rows on either side of said rotatable shaft, and a dispensing mechanism attached to a lower end portion of said rotatable shaft to dispense articles through said bottom opening of said storage area upon rotation of said rotatable shaft, the improvement comprising said dispensing mechanism including a pair of pivotable doors disposed in said bottom opening to block the passage of articles through said bottom opening, one of said doors being located below the first row of articles and the other of said doors being located below the second row of articles, each of said doors being pivotably supported by supporting shafts attached to the article dispenser, a control plate fixed on a lower end of said rotatable shaft for rotary motion with said rotatable shaft and for con-

tacting a lower surface of said pivotable doors to control the pivoting movement of each of said pivotable doors between an open and a closed position, said control plate being dimensioned to support both said pivotable doors in the closed position at a first rotary position and to allow one of said pivotable doors to pivot to the open position while supporting the other



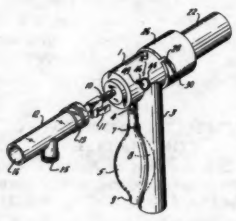
of said pivotable doors in the closed position at a second rotary position spaced approximately ninety degrees from said first rotary position, and a holder member fixed on said rotatable shaft, said holder member having a holding portion to stop the dispensing of articles above the desired number when one of said doors pivots to its open position.

4,565,301

DEVICE FOR DISPENSING RADIOACTIVE GAS

Robert E. Hubbard, Pleasant Hill, and Robert C. Wedemeyer, Menlo Park, both of Calif., assignors to Medi-Physics, Inc., Emeryville, Calif.

Filed Jun. 10, 1982, Ser. No. 387,104
Int. Cl.⁴ A61B *6/00*
U.S. Cl. 222—5 **12 Claims**



1. A device for dispensing a radioactive gas contained in a sealed vial having a pierceable septum wherein the sealed vial is enclosed in a protective casing having an opening surrounding said septum, said device comprising

(a) a dispenser having a outlet for dispensing said radioactive gas from said device and an inlet for feeding a displacement gas into said device;

(b) first needle means protruding from said dispenser operably connected to said inlet, a second needle means protruding from said dispenser and operably connected to said outlet, both said needle means having end portions which protrude from said dispenser for piercing the septum of said vial and extending into the vial;

(c) displacement gas injection means, including a source for said displacement gas connected to said inlet;

(d) a spring means located in said dispenser;

(e) an elongated member protruding from said dispenser, said elongated member having an opening at one end and being movably activated in said dispenser by said spring means, said elongated member being positioned in said dispenser to surround said protruding ends of both of said needle means, said elongated member configurated to fit into said opening of the protective casing to engage the vial within said opening of the elongated member;

(f) means within the opening of said elongated member to engage the vial against the action of the spring means when both of the protruding ends of the needle means are positioned to pierce the septum and extend into the vial;

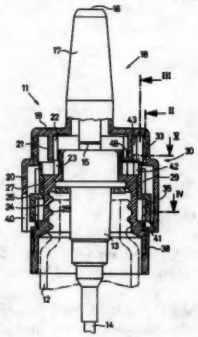
(g) releasable locking means for maintaining the vial within the dispenser positioned against the action of the spring means so that both said needle means pierce the septum and extend into the vial, said locking means being adapted upon release to allow the vial to disengage from the needles through the action of the spring means.

4,565,302

ACTUATABLE DOSING MECHANISM

Peter Pfeiffer, Gaienhofen, and Leo Maerte, Sipplingen, both of Fed. Rep. of Germany, assignors to Ing. Erich Pfeiffer GmbH & Co. KG, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,597
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302160
Int. Cl.⁴ B67D *5/26*
U.S. Cl. 222—38 **18 Claims**



1. An actuatable dosing mechanism with an actuating pusher for dispensing a quantity of a flowable substance from a container during each actuating stroke of the actuating pusher, the dosing mechanism comprising:

a counter for automatically counting the actuating strokes; and,

a locking device between the counter and the actuating pusher for disabling the actuating pusher to prevent further dispensing of the substance after a predetermined number of actuating strokes.

4,565,303

DEVICE FOR DISPENSING PASTE FROM A TUBE

John E. Gilbertson, 2200 Ashworth Rd., West Des Moines, Iowa 50265

Filed Nov. 1, 1984, Ser. No. 667,207
Int. Cl.⁴ B65D *35/28*
U.S. Cl. 222—103 **3 Claims**

1. A device for dispensing paste from a tube having a closed rearward end, an open forward end and a removable cap for closing said forward end, said device comprising:

a base member having a forward end, a rearward end, opposite sides, and a support surface for supporting said tube,

a removable cover member adapted to fit in covering relation over said tube and said base member and having a top

wall, a rearward wall, a forward wall having an opening therein, and opposite side walls,

said top wall, rear wall, forward wall and side walls of said cover member forming a cavity for housing said tube with the forward end of said tube extending through said opening in said forward wall whereby application of force to said cover member collapses said tube such that paste is expelled therefrom, and

a pair of nodules extending outwardly from said sides of said

base member adjacent said rearward end thereof for slidably frictionally engaging said side walls of said cover member to provide a pivot point therebetween, said cover member being adapted to slide upon said nodules such that said pivot point moves closer to said top wall of said cover member as paste is expelled from said tube thereby minimizing the force required to expel paste from said tube and thereby collapsing said tube along the length thereof progressively from said rearward end to said forward end of said tube.

4,565,304

DOSING APPARATUS FOR VISCOUS LIQUID FOODSTUFF

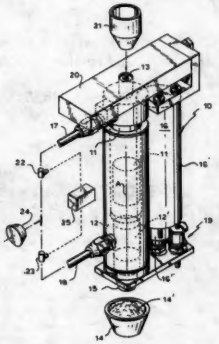
Jean-Marc Dronet, Falaise, France, assignor to Plastimecanique, S.A., Falaise, France

Filed Apr. 18, 1983, Ser. No. 485,642

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1982, 3213996

Int. Cl.⁴ B67D *1/16, 5/40;* G01F *11/28*

U.S. Cl. 222—108 **3 Claims**



1. An apparatus for dosing a liquid or pasty food substance comprising:

an upper tube telescoping coaxially within a lower tub, one of said tubes being coaxially movable with respect to the other of said tubes;

the upper tube being connected to a hopper and the lower tube being provided with a nozzle;

a first valve situated on the upper tube at the end facing the hopper, and a second valve situated on the lower tube in the region of the nozzle, said valves being constructed of elastic bladders;

the elastic bladder of the first valve being inserted and fixed onto the wall of the upper tube and the bladder of the second valve being inserted and fixed onto the wall of the lower tube;

said bladders being inflatable by means of a controller such that each bladder may be inflated independently and in synchronism with the axial motion of one of said tubes with respect to the other, such that conveyance of the liquid or pasty food substance is blocked when a bladder is pressurized and such that the flow of food substance is uninhibited when the bladders are depressurized;

said bladders being annular, hollow and having inner peripheries that lie flush in the inner walls of the tubes when the bladders are depressurized; and

drive means for vertically reciprocating one of the tubes axially relative to the other, and

an annular nozzle bladder in the nozzle surrounding the passage, the control means being connected thereto to deflate same during movement apart of the two tubes to withdraw a drip back into the nozzle.

4,565,305

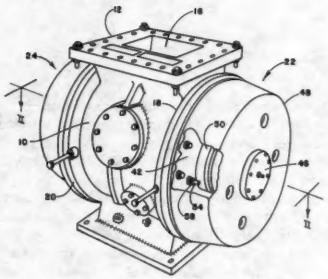
ROTARY VANE VALVE

John Fischer, Montgomery; Kenneth A. Heaton, Lewisburg, and John W. Pfeiffer, Hughesville, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 31, 1983, Ser. No. 499,783

Int. Cl.⁴ G01F *11/24*

U.S. Cl. 222—368 **4 Claims**



1. In a rotary vane valve comprising a generally cylindrical housing section with opposed side fluid inlet and outlet openings allowing transverse fluid flow through said cylindrical housing section; a pair of end bell sections enclosing the opposed terminal ends of the cylindrical housing section; a central, longitudinally axial shaft positioned within the cylindrical housing section and extending outwardly therefrom to be mounted in bearings contained in said end bell sections so as to be rotatable about its longitudinal axis; a pair of spaced, transversely oriented annular shroud members fixed at their inner edges to the shaft and extending radially outwardly therefrom so as to be spaced at their outlet peripheral edges from the cylindrical housing section and a plurality of longitudinally oriented vanes radially projecting from the shaft and being spaced from the cylindrical housing at their terminal ends, wherein the improvement comprises:

(a) at least one annular throttle plate having an inner edge and an outer peripheral edge and being spaced axially outwardly from one of the shrouds and positioned at its outer peripheral edge adjacent to the cylindrical housing section;

(b) means for introducing a purge gas at the inner edge of the annular throttle plate between said annular throttle plate and the shroud, such that said purge gas flows first radially outwardly between said annular throttle plate and said shroud and then axially inwardly between the outer peripheral edge of said shroud and the cylindrical housing section; and

(c) a wedge-shaped, annular sliding adjusting plate laterally abutting the throttle plate, and first and second generally opposed, radially oriented bolts bearing end wise against said adjusting plate to radially displace said plate by their oppositely directed radial motion and thus adjust the axial distance between the throttle plate and said adjacent shroud.

4,565,306

CREAM-STATE FLUID CONTAINER

Kenichi Nakanishi, Minami-ashigara; Hideo Ogita, Hachioji; Tadao Saito, Tokyo, and Riichi Ogawa, Matsudo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 568,120

Claims priority, application Japan, Jan. 18, 1983, 58-5841[U]

Int. Cl.[4] B67D *5/40*

U.S. Cl. 222—383 **11 Claims**

1. A cream-state fluid container comprising:

a body capable of being reduced in interior volume by evacuating the interior thereof in negative pressure,

a head mounted at the top of said body and having a pushbutton and a filling port,

a pump unit internally mounted in said head and operated by the pushbutton of said head for discharging the content of said body to the filling port of said head,

said pump unit having a valve mechanism including a suction valve and a discharge valve in such a manner that a valve body is seated on a cylindrical valve seat formed in said head, a pressure chamber formed in a space from said valve mechanism at the position above said valve mechanism, and an elastic cap capable of being elastically deformed by depressing said cap by said pushbutton, said valve mechanism further comprising a dish-shaped lower base plate engaged fixedly with the peripheral wall of said head from the mimimum-diameter portion of said body, a cylindrical valve seat erected to communicated with said body at the rear part of the base plate, an upper base plate arranged in engagement with a frame and a plate member on the base plate in such a manner that the frame is engaged with the peripheral wall in said head and the plate member is perforated with a through hole formed corresponding to the valve seat of the base plate at the rear part thereof, and another cylindrical valve seat having a size of substantially ½ of the valve seat in the length in communication with the upper part thereof at the front part thereof and depending downwardly at the front part thereof for supporting the base of a valve body formed of a soft synthetic resin (or rubber) with the both base plates wherein the former base has two small cylinders aligned in parallel with each other and engaged with the outer peripheries of the both valve seats as well as both valves are respectively disposed on the both seats in the shape of cantilever at the end faces of the both seats and wherein a suction valve is formed at one side and a discharge valve is formed at the other, and a space formed between the base plates is formed to communicate as a discharge passage with the port.

4,565,307

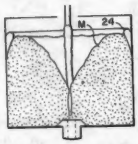
METHOD AND APPARATUS FOR CAUSING CAKING MATERIAL TO FLOW IN BINS

Timothy C. Bonerb, Orchard Park, N.Y., assignor to Vincent C. Bonerb, Boston, N.Y., a part interest

Filed Feb. 14, 1984, Ser. No. 580,155

Int. Cl.[4] B65D *88/62*

U.S. Cl. 222—386.5 **6 Claims**



1. A material handling and storage bin for handling generally granular material which material has a tendency to cake and become nonfree-flowing, the bin being of the type having a top, side walls and a bottom with a discharge opening therein and a flexible pneumatically-operated, generally cup-shaped liner lining the bottom and side walls of the bin to force material into an angle of repose after it is discharged by gravity, the improvements for handling caking material comprising; an elongated, tubular, bag-shaped inflatable membrane suspended from the top of the bin above the discharge opening and having a length approximately as long as the depth of material to be filled in the bin, and means for selectively supplying pressure or vacuum to such tubular, bag-shaped membrane so that the bag-shaped membrane can be inflated prior to filling the bin, and evacuated after filling the bin and prior to initiating discharge through inflation of the pneumatically-operated liner therein.

4,565,308

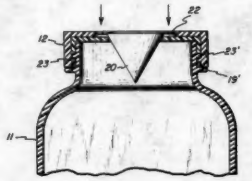
CHILD RESISTANT POWDER DISPENSER

Edward J. Yuhl, Jr., Union, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,499

Int. Cl.[4] B65D *37/00*

U.S. Cl. 222—632 **18 Claims**



1. A dispenser of the squeeze bottle type for dispensing dry powders which comprises:

A. a flexible bottle having an open mouth, to the mouth opening of which is attached:

B. a dispenser closure unit, said closure unit comprising:

i. a conical valve depending within the open mouth of said bottle; and

ii. an integral one piece overcap attached to the mouth of said bottle, said overcap having a central opening therethrough, said overcap being provided with flexible tab retention means extending radially into said central opening for holding said conical valve in sealing engagement with the top opening of said dispenser and for permitting dispensing of the bottle contents from between said conical valve side wall and said central opening upon squeezing said bottle.

4,565,309

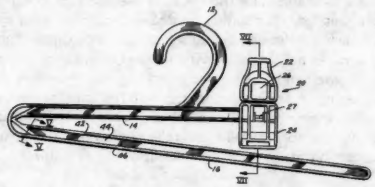
SHIPPING HANGER

John H. Batts, 2565 Frederick Dr., SE., East Grand Rapids, Mich. 49506, and Judd F. Garrison, 3199 E. Beltline, Grand Rapids, Mich. 49505, assignors to John Thomas Batts, Inc., Zeeland, Mich.

Filed Jun. 11, 1984, Ser. No. 619,289

Int. Cl.[4] A47J *51/14*

U.S. Cl. 223—96 **10 Claims**



1. A garment hanger having an elongate body and means intermediate the ends of the body for supporting the hanger, said body having an upper bar and a lower bar, said bars being vertically superimposed, an integral hinge joining said bars at one end of the body, the hanger characterized in that the upper bar is substantially shorter than the lower bar and has front and rear faces, and a garment clamp is supported on the end of said upper bar intermediate the ends of the lower bar, said clamp having a pair of jaws embracing said lower bar for clamping a garment draped over said lower bar and between said jaws, one of said jaws being stationary and the other pivotal, said clamp being offset rearwardly with respect to said lower bar whereby said fixed jaw is vertical and extends below and generally parallel to said rear face of said lower bar.

5. A garment hanger having an elongate body and means intermediate the ends of the body for supporting the hanger, said body having an upper bar and a lower bar, said bars being vertically superimposed, an integral hinge joining said bars at one end of the body, the hanger characterized in that the upper bar is shorter than the lower bar, and a garment clamp is supported on said upper bar intermediate the ends of the lower bar, said clamp having a pair of jaws embracing said lower bar for clamping a garment draped over said lower bar and between said jaws; said hinge having a U-shaped spring element extending from the top of said upper bar to the bottom of said lower bar and being detached from both bars between its ends, a pair of substantially rigid struts of fixed length arranged in a V with its apex integral with said spring element substantially midway between said bars and dividing said spring element into upper and lower operative segments; the other ends of said struts being integral with the top and bottom of said upper and lower bars, respectively, whereby pivotal movement of said lower bar requires each of said spring element segments to be compressed and to deflect outwardly.

4,565,310

METHOD AND APPARATUS FOR CUTTING LIGHT WAVEGUIDES

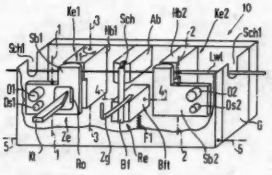
Dieter Krause, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,427

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1983, 3322127

Int. Cl.[4] C03B *37/16*

U.S. Cl. 225—2 **13 Claims**



1. In a method for cutting a light waveguide by notching a stressed waveguide to start the cutting operation, said method comprising the steps of providing a pair of clamping devices, an anvil between the clamping devices, a notching device having a notching tool, and a tension device acting on one of the anvil and clamping devices to place the clamped waveguide in tension to form a stressed waveguide, clamping the waveguides in the clamping devices, actuating the tension device to place the clamped waveguides in contact with the anvil and in axial tension to form a stressed waveguide and actuating the notching device to notch the stressed waveguide to initiate the cutting operation, the improvements comprising in one step placing the clamping device in an open position, the tension device in a non-stressing position and the notching device in the retracted position, then positioning a waveguide between the jaws of the clamping device to extend across the anvil and then sequentially actuating the clamping devices to grip the waveguide, then actuating the tensioning device to axially stress the waveguide, finally actuating the notching device to notch the stressed waveguide to initiate the cutting operation, and then subsequent to the completion of the cutting operation separately releasing the waveguide from one of the clamping devices without releasing the other clamping device, the tensioning device and the notching device so that the waveguide in the one clamping device is removed without damaging the cut end face.

4,565,311

SYRINGE DISPOSAL DEVICE

Lawrence S. Pugliese, R.R. #1, Box 203B, and Jerry L. Eyster, R.R. #1, both of Pittsboro, Ind. 46167

Filed Mar. 12, 1984, Ser. No. 588,730

Int. Cl.[4] B26F *3/00*; B26D *9/00*

U.S. Cl. 225—94 **12 Claims**

1. The syringe destroying machine comprising:

an enclosure;

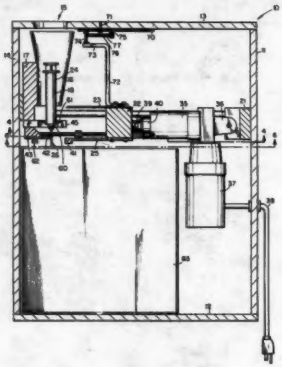
a holder in said enclosure sized to hold a syringe including a hollow main body and attached needle and positioned to locate said syringe entirely within said enclosure;

a carriage slidably mounted in said enclosure and moveable to and from said holder;

a knife mounted to said carriage and extending towards said holder;

electrically operated drive means connected to said carriage

and operable to move said knife towards said holder to cut said syringe; and,



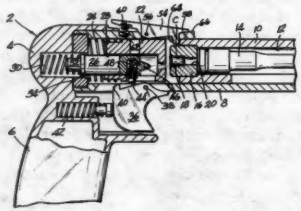
a sliding door mounted to said enclosure and connected to said carriage being moveable over said holder to retain said syringe within said holder while being cut.

4,565,312

POWDER ACTUATED TOOL WITH SAFETY

Brian E. Berry, Indianapolis, Ind., assignor to Uniset Corporation, Indianapolis, Ind.

Filed Feb. 19, 1985, Ser. No. 703,135
Int. Cl.⁴ B25C *1/14*
U.S. Cl. 227—8 **8 Claims**



1. A powder actuated tool comprising:

(a) a housing comprising a pistol grip and a cradle portion;

(b) a firing mechanism mounted on said housing, said firing mechanism including a trigger disposed adjacent to said pistol grip, and a breech block reciprocally siidably mounted in said housing, said breech block being movable between a breechward cocked position and a muzzleward uncocked position.;

(c) a barrel reciprocally slidably mounted on said housing cradle, said barrel being movable between a breech open position and a breech closed position and return, and said barrel being movable through a cocking stroke to move said breech block to said cocked position to cock the tool for firing; and

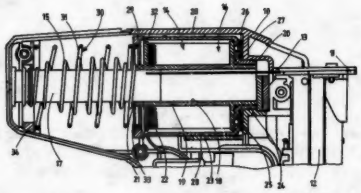
(d) stop means mounted on said housing and movable between a blocking position lying in the path of movement of said barrel through said cocking stroke, and a clear position offset from the path of movement of said barrel through said cocking stroke, said stop means being offset from said trigger sufficiently to prevent concurrent one-handed actuation of said trigger and said stop means.

4,565,313

DRIVE-IN APPARATUS PARTICULARLY AN ELECTRIC TACKER FOR DRIVING IN FASTENERS

Manfred Buck, Nürtingen; Wolfgang Schmid, Filderstadt, and Karl Wanner, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 684,909
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405906
Int. Cl.⁴ B25C *5/15*
U.S. Cl. 227—131 **11 Claims**



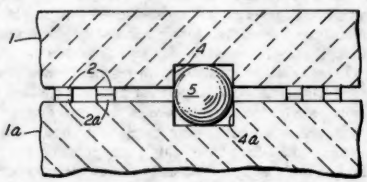
1. A drive-in apparatus for driving fasteners such as clips, nails, tacks, staples and the like into a workpiece, comprising a housing, an impact member guided in the housing for ejecting a fastener, a solenoid including an exciter coil movably arranged in the housing and being formed with a central opening, an armature arranged for reciprocating movement in the central opening and being connected with the impact member, and a biasing spring resting at one end thereof on the housing and engaging the exciter coil to bias the same into a rest position in the direction of forward movement of the armature.

4,565,314

REGISTRATION AND ASSEMBLY OF INTEGRATED CIRCUIT PACKAGES

Harry R. Scholz, Lower Macungie Township, Lehigh County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 9, 1983, Ser. No. 530,743
Int. Cl.⁴ H01L *21/98*
U.S. Cl. 228—180.2 **2 Claims**



1. Method for aligning planar structures face-to-face comprising:

placing a first planar structure face down over a second face-up planar structure so the structures are situated face-to-face and moving one or both structures in one or more directions lying in the plane of the face until a desired alignment between the respective faces is achieved the invention comprising forming an indented region in the face of the first planar structure, forming an indented region in the face of the second planar structure, disposing an aligning ball in one of the indented regions, moving one or both structures until the aligning ball is recessed in both aforementioned indented regions, the invention characterized in that:

a. the alignment ball has a diameter chosen so that when the

aligning ball is recessed in both indented regions a separation exists between the planar surfaces,

b. the alignment ball is formed of solder and the solder is melted to bring the separated surfaces together, and

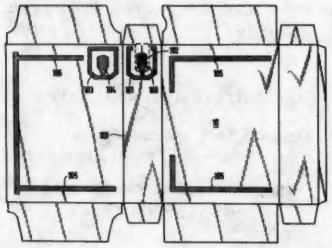
c. at least one of the indented regions is composed of a material that is not wetted by the molten material of the aligning ball.

4,565,315

FOLDING BOX HAVING INSIDE LINING AND ALSO METHOD AND APPARATUS FOR THE PRODUCTION THEREOF

Heinz Wagner, Contwig, and Karl Schieler, Waldfischbach-Burgalben, both of Fed. Rep. of Germany, assignors to CP Schmidt-Verpackungswerk GmbH & Co., KG, Kaiserslautern, Fed. Rep. of Germany

Filed Jun. 21, 1984, Ser. No. 622,850
Int. Cl.⁴ B65D *17/00*
U.S. Cl. 229—17 R **5 Claims**



1. In combination, a folding box and an inside lining, said box having a prepunched opening area for extraction of contents, which area may be ripped open, said inside lining being formed with an impressed window opening area, the box's prepunched opening area and the inside lining's window area being adhered to each other, said inside lining being formed by a foil tube piece which is closed in the longitudinal direction of the tube, a first connection between said box and said inside lining along which said box and inside lining are sealed to each other, said first connection at least partially framing the window opening area and a further connection between said box and said inside lining along which said box and inside lining are sealed to each other, said further connection being specularly symmetrical to the first connection in regard to a folding line which develops on the foil tube piece when it is laid flat for impressing the window opening area, said further connection completely framing the area which corresponds to the window opening area.

4,565,316

TWO-PIECE ASPARAGUS CARTON

Otto J. Jes, Long Beach, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.

Filed Mar. 4, 1983, Ser. No. 472,036
Int. Cl.⁴ B65D *5/32*
U.S. Cl. 229—23 BT **12 Claims**

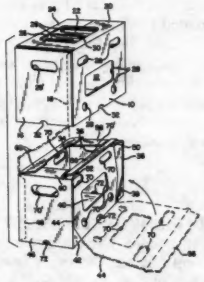
1. A corrugated carton for securely packing for shipment produce such as asparagus, comprising in combination:

(a) a lower box body including:

(1) a bottom, two opposed upstanding side walls, and a rear wall;

(2) a front panel hinged to the bottom of the box body and foldable to a position wherein it slopes inwardly from vertical and inwardly of the front edges of the side walls, extending from the bottom front corner of the box body to a point substantially at the top of the box body, spaced inwardly from the top front edges of the side walls, the front panel being dimensioned to substantially close the front of the carton between said side walls in said sloping position; and

(3) releasably engageable locking means on said front panel and side walls for releasably locking the front panel in its sloping position, said upstanding side walls,



rear wall, front panel and locking means, which when locked in sloping position, define an open top for the lower box body, and

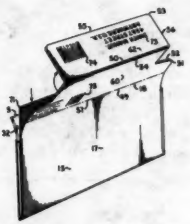
(b) an upper box cover having a top, two side walls, a front wall and a back wall, and being dimensioned to telescope over the lower box body, and covering said open top.

4,565,317

TWO-WAY ENVELOPE WITH INSIDE RETURN SEAL FLAP

Richard Kranz, Shawnee Mission, Kans., assignor to Tension Envelope Corporation, Kansas City, Mo.

Filed Sep. 21, 1983, Ser. No. 534,371
Int. Cl.⁴ B65D *27/06*
U.S. Cl. 229—73 **17 Claims**



1. A two-way envelope, which comprises:

(a) a front panel having:

(1) inner and outer surfaces; and

(2) upper, lower and side edges;

(b) a back panel having:

(1) inner and outer surfaces; and

(2) upper, lower and side edges;

(c) said back panel being integrally connected to said front panel and demarcated therefrom by a lower fold line extending along said front and back panel lower edges;

(d) an initial seal flap integrally connected to said front panel by an initial seal flap tear line extending along said front panel, said initial seal flap tear line at least in part being closely spaced to said back panel upper edge;

(e) a return flap having proximate, distal and side edges, said return flap being integrally connected to said back panel and demarcated therefrom by a return flap fold line extending along said back panel upper and said return flap proximate edges;

(f) a return flap extension having proximate, distal and side

edges, said return flap extension being integrally connected to said return flap and demarcated therefrom by an extension fold line extending along said return flap distal and said extension proximate edges, said return flap and said extension being folded with respect to each other and positioned within said envelope; and

(g) a pair of side flaps each being integrally connected to and demarcated from one of said front and back panels by a respective side flap fold line extending along a respective front or back panel side edge, each said side flap being secured to the other of said front and back panels over an area terminating below the upper edge of said other panel an amount sufficient to facilitate withdrawl of said folded return flap and extension.

4,565,318

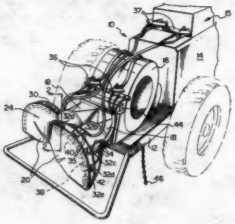
MULTI-LIQUID ELECTROSTATIC METHOD

Ion I. Inculet, London, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Continuation of Ser. No. 493,587, May 11, 1983, Pat. No. 4,518,118. This application May 7, 1985, Ser. No. 731,743

Int. Cl.[4] B05D *1/04*; B05B *5/00*

U.S. Cl. 239—3 **16 Claims**



1. A method of electrostatic spraying chemicals over a large predetermined area comprising:

generating an atomized cloud of droplets having an electric charge wherein the droplets from different discrete layers of the cloud are formed from different liquids, whereby at least one of the layers is directed by at least one other of the layers toward the predetermined area.

4,565,319

FUEL INJECTION UNIT

James C. Potter, London, England, assignor to Lucas Industries public limited company, Birmingham, England

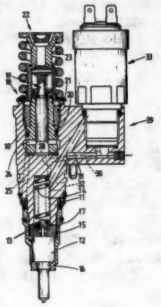
Filed Mar. 18, 1985, Ser. No. 712,644

Claims priority, application United Kingdom, Mar. 23, 1984, 8407579

Int. Cl.[4] F02M *47/00*

U.S. Cl. 239—88 **4 Claims**

1. A fuel injection unit for supplying fuel to a combustion chamber of a compression ignition engine, comprising a body defining a stepped cylindrical portion, a nozzle head, a cap nut serving to secure the nozzle head to an end of the cylindrical portion of the body, said cap nut having a screw threaded skirt portion which is engaged with a screw thread on said cylindrical portion, said cylindrical portion, said nozzle head and said cap nut being located in use in a bore in the cylinder head of the associated engine, pump means located in the body to supply fuel at high pressure to the nozzle head, the wall of the bore having a fuel feed port formed therein, a supply port formed in the body for communication with said feed port whereby fuel can be supplied to said pump means, characterized in that the cylindrical portion of the body defines a step, the unit further including a ring member located about said cylindrical portion of the body, said ring member defining a



clearance with said step, said clearance defining a filtration gap with said step for fuel flowing to the supply port.

4,565,320

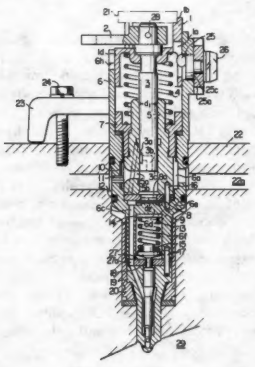
UNIT INJECTOR OF INTERNAL COMBUSTION ENGINE

Hiroyuki Taniguchi, Otsu, and Hiroaki Tsukahara, Kawanishi, both of Japan, assignors to Yanmar Diesel Engine Co. Ltd., Osaka, Japan

Filed Mar. 15, 1982, Ser. No. 357,879

Int. Cl.[4] F02M *47/02*

U.S. Cl. 239—90 **13 Claims**



1. A fuel injector for internal combustion engines comprising a plunger adapted to be reciprocated for pressurizing a supplied fuel, a barrel for receiving said plunger with clearance fit for sliding movement of the latter, a nozzle valve adapted to inject the pressurized fuel into the engine, a check valve interposed between said plunger and said nozzle valve, and an injector body adapted to house said plunger, barrel, nozzle valve and check valve within one body, said injector body being formed substantially in a cylindrical shape having an upper bore and a lower bore which are separated by a partition and which are opened on the upper side and the lower side of said body, respectively, said upper bore being adapted to define a chamber for receiving a plunger spring and a bore portion for receiving said barrel with said plunger and said lower bore being adapted to define a nozzle spring chamber so that when assembled into the unit, a nozzle spring, a nozzle body and said nozzle valve are inserted into said lower bore from the lower side of said injector body and secured in place by means

of a nozzle nut screwed to said injector body from the lower side thereof while said check valve, barrel with said plunger, and plunger spring are inserted into said upper bore from the upper side of said injector body and secured in place by means of a barrel holder screwed into an internally threaded portion formed in said upper bore.

4,565,321

VEHICLE FOR DEICING AIRCRAFT

Godtfred Vestergaard, 18, Niels Frederiksensvej, DK-4000 Roskilde, Kornerup, Denmark

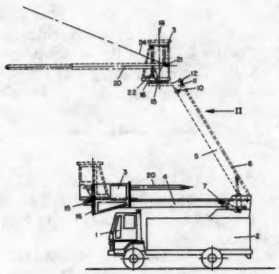
PCT No. PCT/DK82/00109, § 371 Date Dec. 16, 1983, § 102(e) Date Dec. 16, 1983, PCT Pub. No. WO83/02100, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 8, 1982, Ser. No. 537,376

Claims priority, application Denmark, Dec. 8, 1981, 5432/81

Int. Cl.⁴ B05B *9/00*

U.S. Cl. 239—172 **10 Claims**



1. A vehicle for deicing aircraft and of the type comprising a wheeled carriage **(1)** having a lifting device **(4,5,6,7)** which at its free end carries an operation platform, and having a spray device for spraying an aircraft with a deicing fluid, said spray device comprising a pump including a spray nozzle **(40)**, the lifting device **(4,5,6,7)** being adapted for elevating and lowering so as to retain the center of gravity of the total mass of the equipment within the area determined by the wheels of the carriage, the operation platform including a closed protective cabin **(3)** pivotally supported on said lifting device **(4,5,6,7)**, wherein the cabin **(3)** carries a longitudinally adjustable, lightweight boom **(20)** carrying at its free end the spray nozzle **(40)**, said nozzle being pivotal about each of two axes extending perpendicular to each other and intersecting at a point located on the longitudinal axis of discharge from said nozzle in order to prevent displacement of the nozzle by reaction force generated by the spray discharged therefrom, said nozzle being supported for said pivotal movement about said axes by respective support means driven by respective activator means remotely controlled from said cabin.

4,565,322

LIQUID SPRAY APPARATUS FOR DISPENSING LIQUID DROPLETS OF CONSTANT DROPLET SIZE

Alfred Graber, Fischbach-Göslikon, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

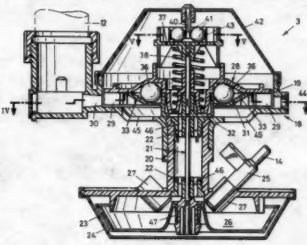
Filed Dec. 12, 1983, Ser. No. 560,653

Claims priority, application Switzerland, Dec. 21, 1982, 7468/82

Int. Cl.⁴ B05B *3/10*

U.S. Cl. 239—223 **10 Claims**

1. A liquid spray apparatus for dispensing liquid droplets of constant droplet size comprising a liquid container; a liquid distributing device in fluid communication with said liquid container and comprising a shaft, a spray head, a spray plate contained in said spray head and mounted on said saft, drive means for said spray plate, said drive means comprising a vane wheel mounted axially displaceably on said shaft adapted for being acted upon by a gas stream, said mounting of both said spray plate and said vane wheel on said shaft resulting in common rotation of the two, and means for regulating the speed of said spray plate comprising regulating elements being movable radially outwardly at increasing speed of said vane wheel and



under the influence of centrifugal forces, said vane wheel being coupled to said regulating elements and being displaced at least partially out of the range of said gas stream when said regulating elements move radially outwardly; a pressurized gas source for generating said gas stream and a nozzle directing said gas stream on to said vane wheel.

4,565,323

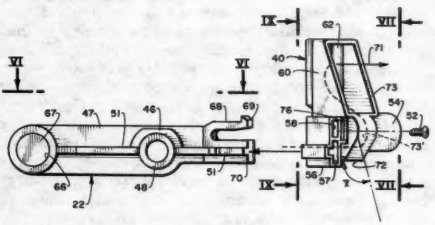
SPRINKLER SYSTEMS

Ronald R. Berkan, Sacramento, Calif., assignor to Action Pact, Inc., Sacramento, Calif.

Filed May 2, 1983, Ser. No. 490,325

Int. Cl.⁴ B05B *3/14*

U.S. Cl. 239—230 **12 Claims**



1. In a sprinkler head having a body, a sprinkler nozzle on the body through which water is ejected from the sprinkler head in a forward direction and an oscillating spring biased impact arm having a reaction member intercepting the water ejected by the nozzle, then biased to the rest position to impact the body and effect rotation of the body through a preselected arc by small angular increments, a retaining member fixedly mounted to said body retaining a helical spring between said retaining member and said impact arm for biasing the same, the improvement which comprises:

a boss on said arm, said spring being directly connected at one end to said retaining member and at the other end to said arm encircling said boss,

and a reaction member having a rearwardly facing arcuate deflector surface for diverting water issuing from the nozzle through a first angle of between about 105 and 119 degrees laterally and rearwardly from said forward direction, to a spoon section having a pair of vertically side by side forwardly facing arcuate concave elongated deflector channels separated by an upstanding horizontal vein for receiving diverted water from said rearwardly facing deflector surface and for splitting the diverted water into two parallel streams, said spoon section also having a portion disposed a substantialy distance rearwardly of said

rearwardly facing deflector surface for redirecting the parallel streams of water forwardly to a direction substantially parallel with said forward direction, whereby water issuing from the nozzle is substantially confined to the preselected arc through which the sprinkler is rotated, and wherein said sprinkler is operative at pressures of less than 15 p.s.i.

4,565,324

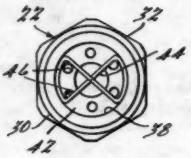
NOZZLE STRUCTURE FOR SOOTBLOWER

Edward Rebula, Bloomfield, Conn., and Alexander J. Kurasz, Columbus, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 1, 1983, Ser. No. 499,875

Int. Cl.⁴ F22B *37/52*; B05B *1/28*; B08B *3/02, 9/00*

U.S. Cl. 239—290 **20 Claims**



1. In a sootblower for cleaning heat exchange surfaces within a boiler by impingement of a jet of fluid blowing medium thereagainst including a lance tube disposed in communication with a source of pressurized blowing medium, the improvement comprising at least one nozzle mounted in the peripheral wall of said lance tube for discharging a composite stream of blowing medium therethrough, said nozzle comprising a tubular element formed with a first aperture extending substantially centrally therethrough defining an inlet throat disposed in communication with the interior of said lance tube and a discharge throat for discharging the blowing medium in a directionally oriented primary stream, said tubular element formed with a plurality of second apertures each having an inlet port disposed in communication with the pressurized blowing medium and a discharge port arranged in circumferentially and radially spaced relationship outwardly of said discharge throat for discharging a plurality of secondary streams of blowing medium in encircling radially spaced relationship around the primary stream at the point of discharge of each said secondary streams from each said discharge port, said secondary streams protecting the primary stream from dispersion due to currents within the boiler whereby the primary stream provides improved cleaning performance.

4,565,325

WATER COOLING APPARATUS FOR METAL SHEETS AND BELTS

Bernhard Ludwig, Ratingen, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 486,368, Apr. 19, 1983, abandoned. This application May 29, 1985, Ser. No. 738,897

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215248

Int. Cl.⁴ B05B *1/04*

U.S. Cl. 239—597 **7 Claims**

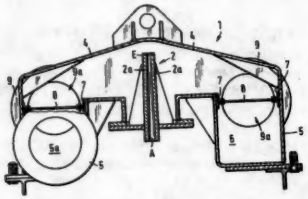
1. An apparatus for providing a coherent gravity fed water curtain to cool metal sheets moving in a substantially horizontal direction, comprising:

(a) a water holding box;

(b) said water holding box being provided with an inlet for attachment to a constant source of water;

(c) said water holding box being provided with a vertically extending slit-shaped nozzle extending across said substantially horizontal direction;

(d) said slit-shaped nozzle having a pair of longitudinal water containment walls extending both basically vertically in said water holding box and across said substantially horizontal direction, said slit-shaped nozzle also having a pair of side water containment walls, said slit-shaped nozzle ending with a top-located nozzle inlet and a bottom-located nozzle outlet; and



(e) said slit-shaped nozzle being provided with a net overall water pressure drop means between said nozzle inlet and said nozzle outlet such that the water pressure entering said nozzle inlet is greater, along said longitudinal water containment walls, than said water pressure leaving said nozzle outlet.

4,565,326

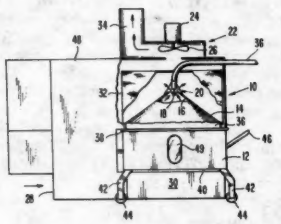
METHOD AND APPARATUS FOR REMOVING VENEER FROM REWORKED MEDICINE TABLETS

Willard D. Varley, Wilson, N.C., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 14, 1984, Ser. No. 681,528

Int. Cl.⁴ B02C *23/08*; B07B *4/08*

U.S. Cl. 241—24 **6 Claims**



1. An apparatus for removing veneer shards from reworked medicine tablets comprising:

(a) means for holding granulated material comprised of milled medicine tablets, some of said granulated material being comprised of medicinal granulation and some of said granulated material being comprised of lighter veneer shards;

(b) a separator cone having one or more walls which slope upward and inward defining an air flow outlet at the top of said separator cone, said separator cone being above said means for holding said granulated material, said means for holding granulated material being comprised of a fluid bed dryer dolly which is adapted to be placed into an upward flow of air beneath said separator cone;

(c) means for suspending said granulated material in an air suspension beneath said separator cone to cause said vaneer coating shards to rise up said one or more walls;

(d) a vacuum inlet above, adjacent to and spaced from said air flow outlet, said vacuum inlet being connected to a vacuum and serving to ingest material which is lighter than said granulated medicinal granulation which is to be retained in the air suspension, whereby said veneer shards

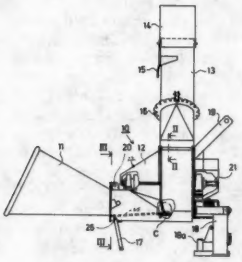
in said granulated material will be extracted from the remaining medicinal granulation in the air suspension.

4,565,327

APPARATUS FOR PIECE-CHOPPING WOOD

Pasi Kylmänen, Liminka, Finland, assignor to Kopo Konepohja Oy, Finland

Filed May 8, 1980, Ser. No. 148,060
Claims priority, application Finland, May 10, 1979, 791491
Int. Cl.[4] B02B *1/00*
U.S. Cl. 241—56 8 Claims



1. Apparatus for piece-chopping wood comprising:

a housing for accommodating rotary blade apparatus therein;

a discharge tube having one end communicating with said housing and through which the chopped wood pieces are discharged from said apparatus;

a feed hopper having one end communicating with said housing and through which wood to be chopped is fed in a feed direction into said housing;

blade apparatus rotatably mounted within said housing, said blade apparatus including a helical, screw-like blade member having a conical outer configuration which increases in diameter in the direction in which the wood is fed into said housing, the axis of said helix comprising the axis of rotation of said blade apparatus extending in substantially the same direction as said feed direction in which wood to be chopped is fed into said housing from said feed hopper and wherein the outer edge of said helical blade member is shaped to function as a cutting blade;

a fluted guide surface provided in close cooperating relationship with said screw-like blade member such that wood to be chopped which is fed through said feed hopper is engaged by said blade member and against said fluted guide surface so that said guide surface simultaneously aids in the chopping and further feeding of the wood while preventing the latter from withdrawing from the housing; and

wherein said helical blade member defines an angle of inclination with a plane extending normal to the axis of rotation of said blade apparatus, said angle of inclination increasing in the direction in which the wood to be chopped is being fed.

4,565,328

SAND RECLAMATION SYSTEM WITH THERMAL PIPE RECLAIMER APPARATUS

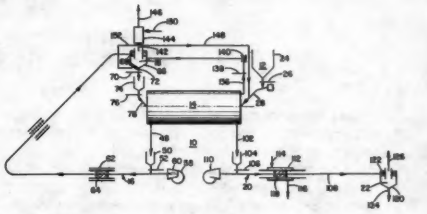
Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 8, 1983, Ser. No. 521,495
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—65 12 Claims

1. A system for treating solid, granular and aggregate material thermally comprising:

(a) storage hopper means containing a supply of the material to be thermally treated;

(b) heat exchanger means including a first chamber means, a second chamber means and rotating means cooperatively associated with said first chamber means and said second chamber means for effecting the rotation thereof, said first chamber means having inlet means connected to said storage hopper means for receiving material therefrom and outlet means, said first chamber means being operative to retain the material therewithin while the material is being preheated during the course of the passage thereof in a first direction through said first chamber means, said second chamber means having reentry means and discharge means, said discharge means being operative to discharge material from said second chamber means, said second chamber means being operative to retain the material therewithin while the material undergoes cooling during the course of the passage thereof in a second direction through said second chamber means, said second chamber means being located in juxtaposed relation to



said first chamber means such that the preheating of the material during the passage thereof through said first chamber means and the cooling of the material during the passage thereof through said second chamber means is effected by a heat exchange between the material traversing said second chamber means in a second direction and the material traversing said first chamber means in a first direction; and

(c) thermal pipe means for thermally treating the material, said thermal pipe means having one end thereof connected to said outlet means of said first chamber means of said heat exchanger means for receiving material therefrom, said thermal pipe means including blower means and burner means operative to generate a hot gas flow through said thermal pipe means for subjecting the material to a predetermined temperature for a preestablished period of time in order to effect the thermal treatment thereof.

4,565,329

FOOD SLICER

Kohei Himi, Mie, Japan, assignor to Chubu Industries, Inc., Mie, Japan

Filed Jul. 16, 1984, Ser. No. 631,377
Claims priority, application Japan, Feb. 24, 1984, 59-33994; Apr. 27, 1984, 59-85847
Int. Cl.[4] B02C *18/16*
U.S. Cl. 241—95 5 Claims

1. In a food slicer comprising:

a cutting plate having a plate body mounted, at its rear surface, with a cutter having a cutting edge which passes through an opening formed in said plate body and projects beyond the surface thereof;

a transfer rotor mounted to an upper portion of a rotary shaft which passes through a central hole in said cutting plate to extend beyond said cutting plate and including a hopper secured to an upper portion of said transfer rotor; and

a drive member, disposed beneath said cutting plate, for rotating said rotary shaft,

the improvement wherein said cutting plate is removably mounted by a quick disconnect to a frame which is

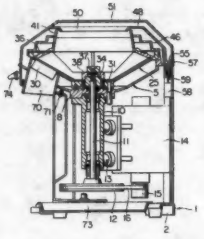
mounted to posts standing uprightly on a base below said cutting plate,

said frame rotatably supports said rotary shaft;

said transfer rotor is removably secured to said rotary shaft;

a hood is mounted to said base, for surrounding a region in which said drive member is arranged beneath said frame; and

a discharge chute is mounted to said hood, which discharge chute passes through an opening formed in said frame to



extend upwards and has an upper end abutting against a circumferential portion contiguous to said opening formed in said plate body of said cutting plate,

said frame takes the form of a closed plate except for said opening through which said discharge chute passes, thereby providing a leakage preventive plate for closing a top opening of said hood, and said frame is connected with a drain pipe which passes through said hood to extend downwardly.

4,565,330

SHREDDING APPARATUS

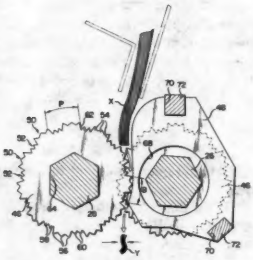
Hiroharu Katoh, Tokyo, Japan, assignor to Yoshin Giken Co., Ltd., Joetsu, Japan

Filed Nov. 29, 1983, Ser. No. 555,939

Claims priority, application Japan, Nov. 30, 1982, 57-181019[U]

Int. Cl.⁴ B02C *18/22*

U.S. Cl. 241—236 **13 Claims**



1. A shredding apparatus for cutting unnecessary sheets, comprising:

(a) a support;

(b) first and second rotary shafts extending in parallel and rotatably connected to the support so as to be rotated in opposite directions;

(c) a plurality of first cutting disks equidistantly mounted on the first rotary shaft and driven together with the first rotary shaft, and a plurality of second cutting disks equidistantly mounted on the second rotary shaft and driven together with the second rotary shaft, each of the cutting disks comprising:

(i) a plurality of large tooth portions equidistantly arranged on the outer circumferential surface of the associated cutting disk, wherein each large tooth portion comprises a plurality of large teeth, and wherein the tip of each large tooth is formed as a large axial blade;

(ii) a plurality of small tooth portions arranged on the outer circumferential surface of the associated cutting disk in the regions between the large tooth portions, wherein each small tooth portion comprises a plurality of small teeth; and

(iii) radial blades formed at the outer peripheral edges of the associated cutting disk, wherein the outer peripheral edges of the first and second cutting disks are in sliding contact, and wherein the sheets are taken up by the large and small tooth portions in accordance with rotation of the first and second cutting disks so as to be shredded in a first direction parallel to the taking-up direction of the sheets in cooperation with the outer peripheral edges of the first and second cutting disks which slide relative to each other;

(d) a plurality of first back plates fixed against rotation relative to the support and equidistantly spaced along but not fixedly attached to the second rotary shaft, wherein each of the first back plates is disposed between a pair of second cutting disks, and wherein the sheets are shredded in a second direction perpendicular to the first direction in accordance with the cooperation between the large axial blades of the first cutting disks and the associated first back plates; and

(e) a plurality of second back plates fixed against rotation relative to the support and equidistantly spaced along but not fixedly attached to the first rotary shaft, wherein each of the second back plates is disposed between a pair of first cutting disks, and wherein the sheets are shredded in a second direction perpendicular to the first direction in accordance with the cooperation between the large axial blades of the second cutting disks and the associated second back plates.

4,565,331

THREAD ANCHORING METHOD AND APPARATUS FOR USE IN WINDER

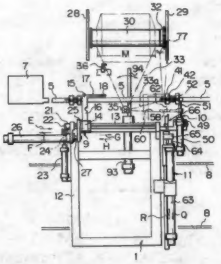
Susumu Matsubara; Shouetsu Nitta; Kiyoaki Hashiba, and Yuuichi Noguchi, all of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 1, 1984, Ser. No. 656,773

Claims priority, application Japan, Oct. 3, 1983, 53-184881

Int. Cl.⁴ B65H *54/02, 54/26*

U.S. Cl. 242—18 PW **14 Claims**



1. A thread anchoring method for anchoring thread to a winder comprising the steps of spanning a section of an indefinite length of thread supplied from a supply source in a predetermined direction by regulating the path of said thread extending from a stationary thread guide towards an empty bobbin in said winder, anchoring said thread section to an anchoring portion of a thread anchoring disc in said winder by arresting said thread section and protruding said thread section

towards said thread anchoring disc, bringing said thread section extending between said thread guide and said anchoring portion on said disc into engagement with a traverse means and thereafter releasing said arresting of said thread section, characterized by the steps of offsetting said thread section extending from said thread guide to said bobbin to a position in which the thread section faces said thread anchoring disc at one end of said empty bobbin along and over a traverse guide of said traverse means, spanning said thread section vertically by regulating said path of thread from above and below, and anchoring said thread section to said anchoring disc by arresting said vertically spanned thread section at a point thereof, protruding said arrested thread section outwardly from said thread anchoring disc and displacing said thread section so that the thread section passes slantly from a position outward from the thread anchoring disc to said empty bobbin in horizontal plane.

4,565,332

METHOD AND DEVICE FOR AVOIDING THE FORMATION OF RIBBON WINDINGS WHEN WINDING CHEESES

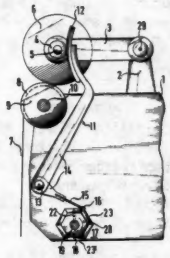
Hermann Slaghuis; Rolf Mayer, both of Monchen-Gladbach; Heribert Kargel, Viersen, and Heinz G. Bender, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 633,133

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326217

Int. Cl.[4] B65H *54/38*

U.S. Cl. 242—18.1 **10 Claims**



1. Method of avoiding a formation of ribbon windings when winding a frictionally driven crosswound coil with a wild winding, which comprises directly applying a braking force to an element rotatingly connected with the crosswound coil and secured thereto against relative rotation therewith, increasing the braking force with increasing mass of the crosswound coil, and controlling the braking force so as to avoid synchronism between thread guidance rhythm in the drive cylinder and rate of rotation of the crosswound coil.

4,565,333

CABLE WINDER SYSTEM

Harry Menelan, St. Catharines, Canada, assignor to Fleet Industries, Fort Erie, Canada

Filed Jul. 11, 1984, Ser. No. 629,698

Int. Cl.[4] B65H *51/20, 75/00*

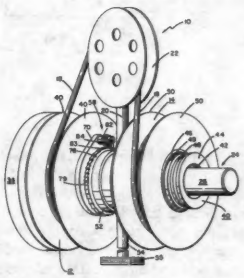
U.S. Cl. 242—54 R **4 Claims**

1. In an apparatus for transferring cable between a driven rotatable spool and a fixed spool, where said driven rotatable spool is mounted on a stub shaft and said fixed spool is coaxially mounted with respect to said driven rotatable spool along a common axis, and where the axis of rotation of said driven rotatable spool is substantially co-extensive with said common axis, the transfer of cable being such that cable is transferred from said fixed spool to said driven rotatable spool when said driven rotatable spool is rotated in a first direction of rotation, and from said driven rotatable spool to said fixed spool when said driven rotatable spool is rotated in a second direction of rotation, the combination comprising:

(a) an arm secured to an axle which, in turn would be freely rotatably mounted on said stub shaft, said arm extending in a direction substantially perpendicular to said common axis for rotation around the axis of rotation of said driven spool axis;

(b) a planetary pulley mounted for free rotation at the outer end of said arm, the radial plane of said planetary pulley being substantially parallel to said common axis, said planetary pulley being mounted so as to accommodate cable as it is being transferred between said rotatable spool and said fixed spool;

(c) positive driving means for said arm to counteract said freely rotatably mounted axle including a drive ratchet secured to one face of said axle, and a driving pawl plate connected to a driving cone clutch which is operatively associated with said driven rotatable spool; and



(d) positive braking means for said arm to counteract said freely rotatably mounted axle including means secured to the other face of said axle, and adapted to be in driving contact with an actuatable cooperative member which is operatively associated with said fixed spool;

whereby,

(i) rotation of said rotatable spool in said first direction causes said positive driving means to be actuated, and causes said arm to rotate out of the influence of said positive braking means around said arm in the same direction of rotation as said rotatable spool at the same speed of rotation as that of said rotatable spool; and

(ii) rotation of said rotatable spool in said second direction causes said positive braking means to apply a braking force to the rotation of said axle, and causes said arm to be rotated out of the influence of said positive driving means, thereby to control cable tension.

4,565,334

ELECTROHYDRAULIC DRIVE FOR PROCESS LINE WINDERS, UNWINDERS AND OTHER EQUIPMENT

Robert C. Ruhl, Cleveland Heights, Ohio, assignor to Kennecott Corporation, Cleveland, Ohio

Continuation of Ser. No. 435,975, Oct. 22, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 670,668

Int. Cl.[4] B65H *75/00, 59/00, 57/28*

U.S. Cl. 242—54 R **18 Claims**

1. An electrohydraulic drive and control system for a rotating member that engages and controls the speed and tension in an indefinite length of material in a process line, comprising

a supply of hydraulic fluid at a constant supply pressure and variable flow rate, a bi-directional, variable displacement hydraulic motor connected to said rotating member and having an inlet and an outlet for said fluid,

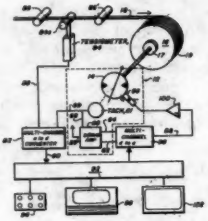
a feed line and a return line that conduct said fluid between said supply and motor,

a variable pressure reducing valve connected in said feed line, said valve including a proportional actuator that produces an output flow of said fluid to said motor at a pressure less than said supply pressure,

first means connected in said return line for setting an adjustable fixed pressure in said return line,

a hydraulic regeneration circuit connected between said feed line and said return line and operable when said motor brakes,

a controller that generates (i) a speed limit control signal for limiting the speed of said motor and (ii) a pressure limit



control signal related to a maximum desired pressure in said feed line, and

an electronic control circuit that produces an output control signal for said proportional actuator, said circuit being responsive to (i) the speed of rotation of said motor (ii) said speed limit control signal and (iii) said pressure limit control signal, said speed limit control signal being an electrical signal proportional to the desired maximum speed of rotation of said motor and said pressure limit control signal being an electrical signal proportional to the desired maximum pressure in said feed line downstream of said variable pressure reducing valve.

4,565,335

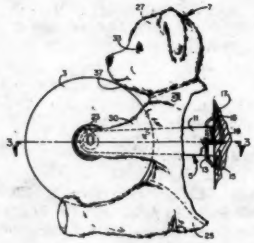
SIMULATED ANIMAL TOILET TISSUE HOLDER

Georgia A. Rankin, 3910 Hwy. 42-57, Sturgeon Bay, Wis. 54235

Filed Sep. 10, 1984, Ser. No. 648,675

Int. Cl.⁴ B65H *19/00*

U.S. Cl. 242—55.2 **10 Claims**



1. An aid for toilet training children comprising:

a flexible fabric formed into the shape of an animal having a head, a torso, a pair of generally forwardly extending front legs, and a pair of hind legs;

frame means for supporting the fabric to simulate the selected animal; said frame means including members inserted into parts of said fabric simulating one of said pairs of legs of the animal to support opposite ends of a roll of tissue paper between the legs in said one pair and the members therein; and

mounting means for mounting the frame means to a selected mounting surface.

4,565,336

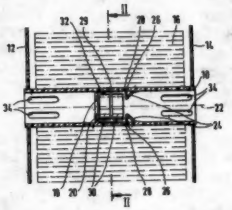
TAKE-UP SPOOL FOR A DEVICE FOR APPLYING AND CONVEYING A HOSE-SHAPED PROTECTIVE COVERING FOR A TOILET SEAT

Bela Hefty, Beckenried, and Arpad Hefty, Richenthal Schweiz, both of Switzerland, assignors to Hygolet AG, Hergiswil, Switzerland

Filed Oct. 3, 1984, Ser. No. 657,325

Int. Cl.⁴ B65H *16/06*

U.S. Cl. 242—55.55 **2 Claims**



1. A take-up spool for a protective covering for a toilet seat, said take-up spool being tubular and having a cavity into which disc-shaped tablets can be inserted which give off deodorizing and/or disinfecting agents to the surrounding air, a stop wall in the middle portion of the cavity, at least one elastic tongue protruding from the inner wall of the tubular spool spaced from the stop wall and defining thereby a tablet stopping position, said tongue being movable by a tablet during insertion thereof to a non-stopping position for passage of a tablet into the space between said stop wall and a said elastic tongue, and means defining a passage for enabling gas to pass from said cavity.

4,565,337

METHOD AND APPARATUS FOR FORMING A LAP

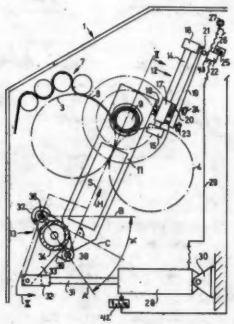
Giancarlo Mondini, Winterthur, and René Schmid, Niederneunforn, both of, Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Oct. 4, 1984, Ser. No. 657,613

Claims priority, application Switzerland, Oct. 12, 1983, 5561/83

Int. Cl.⁴ B65H *17/08*

U.S. Cl. 242—66 **6 Claims**



1. A method for forming a lap comprising the steps of:

rolling a lap bobbin or the lap formed thereon on two drivable and rotatable winding rollers carrying the bobbin or the lap;

pressing the bobbin or the lap with a predetermined force against the winding rollers;

controlling said force in such a manner that the contact pressure arising in contact surfaces of the bobbin or the lap on the winding rollers is controllable; and

controlling the force such that the contact pressure remains substantially constant; and

increasing the contact force with increasing build-up of the lap such that the contact pressure remains substantially constant at each layer of the formed lap.

4,565,338

EMERGENCY LOCKING SEAT BELT RETRACTOR WITH AUTOMATIC LOCKING MECHANISM

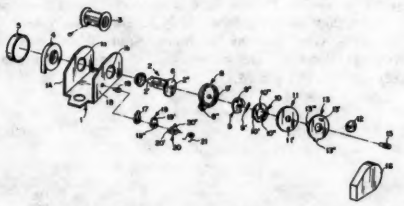
Juichiro Takada, 3-12-1 Shinmachi Setagayaku, Tokyo, Japan

Filed Mar. 6, 1985, Ser. No. 708,600

Claims priority, application Japan, Mar. 12, 1984, 59-045665

Int. Cl.[4] A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 B **3 Claims**



1. A seat belt retractor comprising a belt reel rotatably mounted in a frame and resiliently urged to rotate in one direction to wind the belt into the reel, a ratchet wheel coupled to the belt reel for rotation therewith, a pawl supported on the frame for movement between a locking position in engagement with a tooth of the ratchet wheel in which rotation of the reel in the belt-unwinding direction is prevented and a non-locking position clear of the path of ratchet wheel teeth, means responsive to rotational acceleration of the belt reel above a selected level for moving the pawl to the locking position, and means responsive to a selected amount of rotation of the belt reel in the belt-unwinding direction for automatically urging the pawl resiliently to the locking position and responsive to a selected amount of rewinding of the belt reel for automatically urging the pawl resiliently to the non-locking position including a pivotable actuator engageable with the pawl in the locked and unlocked positions through a lost motion coupling, an over-center spring biasing the actuator toward said engagements while allowing lost motion, whereby the pawl can move between the locked and unlocked positions against the bias of the over-center spring, and a reduction mechanism coupled to the reel and including a rotatable output member having two circumferentially spaced-apart lugs, one of which engages and moves the actuator to one over-center position upon unwinding rotation of the belt reel and the other of which engages and moves the actuator to the other over-center position upon rotation of the belt in the belt-winding direction.

4,565,339

SYSTEM FOR GUIDING A MISSILE BY A FLAT LIGHT PENCIL BEAM

Jacques J. Lonnoy, Paris, and Roland Mousson, Soisy sur Seine, both of France, assignors to Societe Anonyme de Telecommunications, France

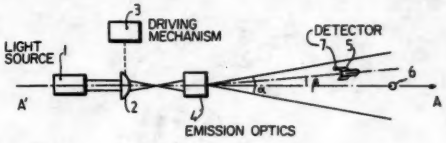
Filed Jan. 17, 1984, Ser. No. 571,583

Claims priority, application France, Jan. 20, 1983, 83 00838

Int. Cl.[4] F41G *7/26*

U.S. Cl. 244—3.13 **2 Claims**

1. In a system for guiding a missile in a direction of sight, comprising a detector on said missile, said missile also having rudders, a source of emission producing a light beam whose axis corresponds to the direction of sight, means for analyzing the field of observation, adapted to convert the light beam emitted by the source into at least one flat, elongated pencil beam having a width ϵ and to drive the pencil beam in rotation at a speed ω, about an axis merged with the direction of sight (A'A), to be received by the detector in a time τ, said detector being operable to provide an output signal in response to receipt of said pencil beam, processing means on said missile for determining, from the output signal of the detector, at least one deviation coordinate of the missile with respect to the direction of sight, and operable to control the rudders of the missile in



order to control its path on the direction of sight, said processing means being adapted to determine the polar coordinates (τ,θ) of the missile with respect to a reference axis (Ox) having an origin (O) located on the axis (A'A) of the pencil beam, the metric coordinate ρ as a function of the speed of rotation ω, of the width ϵ and of the time of passage τ, and the angular coordinate θ as a function of time t taken by the pencil beam, during its rotation, to reach the missile, and two master clocks maintained in synchronism are respectively associated with the source of emission and with the detector of the missile.

4,565,340

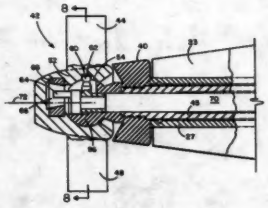
GUIDED PROJECTILE FLIGHT CONTROL FIN SYSTEM

William R. Bains, Lake Elsinore, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 15, 1984, Ser. No. 641,137

Int. Cl.[4] F42B *13/30, 15/16, 15/14*

U.S. Cl. 244—3.28 **9 Claims**



1. A guided spinning projectile, comprising:

(a) a body;

(b) a nutatable guidance fin assembly mounted on the aft end of said body;

(c) control rod means for nutating said fin assembly; and

(d) de-spinning means for rotating said fin assembly and control rod means at a rate equal to the spin of the projectile but in the opposite direction.

4,565,341

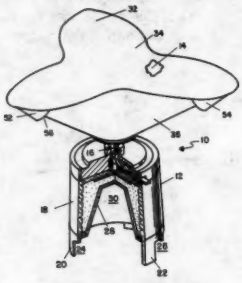
INFLATABLE DECELERATOR

Alexey T. Zacharin, 14 Cherry La., Parsippany, N.J. 07054

Continuation of Ser. No. 305,010, Sep. 24, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,531

Int. Cl.[4] B64D *17/80*

U.S. Cl. 244—113 **12 Claims**



1. A combination deceleration and de-spin device for attachment to a sub-munition, comprising:

an inflatable starshape chamber having at least three radially extending lobes and having in its inflated state an essentially flat upper surface and a conical lower surface,

air inlet means on each of said lobes proximate the outermost ends thereof, and

air scoop means operatively related to each said air inlet means and including an upstanding hood around said inlet means and spaced-apart therefrom for capturing a portion of external airflow around said chamber and directing said portion into said inlet to inflate said chamber.

4,565,342

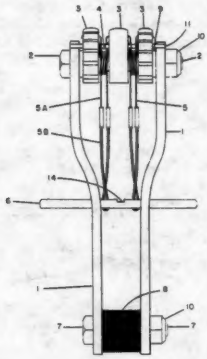
ANCHORING DEVICE FOR ROCK CLIMBING

Robert D. Grow, 2708 Green Bay Way, Sacramento, Calif. 95826

Filed Jul. 12, 1984, Ser. No. 630,369

Int. Cl.[4] A47G *29/00*

U.S. Cl. 248—1 **4 Claims**



1. An anchoring device for climbing having: two longitudinal frame members; two or more convex cams mounted on a spindle that extends between like ends of the longitudinal frame members, with each cam adapted for pivotal movement in the direction opposite the movement of an adjacent cam or cams; an operating bar slidably mounted in slots in the longitudinal frame members said operating bar having its center or midpoint exposed between the two longitudinal frame members to allow easy access to the center of the operating bar and facilitate operation of the device, said operating bar being connected to each cam such that sliding the operating bar in the slots in the direction away from the cams will actuate movement of the cams from an extended to a retracted position against the urging of coil springs mounted on the spindle and connected to the cams; and a connection between the longitudinal frame members at the end furthest from the cams, said connection serving as an attachment point for a climbing rope and completing the frame; said frame having two parallel sections of unequal widths, the section at the end nearest the cams being wider, as width is measured by the distance between the two longitudinal frame members.

4,565,343

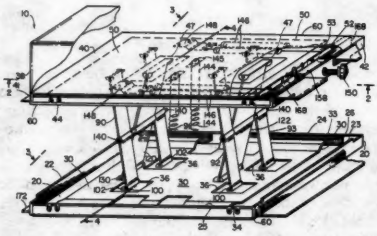
TERMINAL ELEVATING MECHANISM

Ralph J. Lake, Jr., Somerville; Nanjappa Bakthavachalam, Neshanic Station; Thomas A. Kachnowski, Flemington; Kevin S. Buist, New Brunswick, all of N.J.; David K. Walz, Stone Mountain, Ga.; Timothy R. Stern, Southfield, Mich., and Frank H. Stephens, Dunwoody, Ga., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 18, 1983, Ser. No. 524,403

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—346 **8 Claims**



6. An elevating support mechanism comprising

a rectangular base plate having left and right edges and front and rear edges,

an upstanding wall at each of said edges,

a first L-shaped bracket secured to each of said front and rear edges and extending inwardly to form a channel with the associated upstanding wall,

a first slotted guide member secured in each of said channels disposed along said front and rear edges of said base plate,

a second L-shaped bracket secured to all of said edges of said base plate and extending outwardly therefrom,

a lower rectangular slidable plate adjacent to and above said base plate and slidable with respect to said base plate,

said lower slidable plate having four rectangular apertures,

a rectangular upper plate having left and right edges and front and rear edges and adapted to support apparatus to be used by an operator,

a depending wall at each of said edges of said upper plate,

a first L-shaped bracket secured to the depending wall at each of said front and rear edges of said upper plate and extending inwardly to form a channel therewith,

a second slotted guide member secured in each of said channels disposed along said front and rear edges of said upper plate,

second L-shaped brackets secured to said edges of said upper plate and extending outwardly therefrom,

a bellows enclosing said mechanism and held in place on said L-shaped brackets,

an upper rectangular slidable plate adjustable to and beneath said upper plate and slidable with respect to said upper plate,

said upper slidable plate having two rectangular apertures,

four first lifter arms in the form of flat plates, each pivotably secured to one end to said base plate and pivotably secured at the other end to said upper slidable plate, said first lifter arms all sloping in the same direction with a negative slope from said base plate to said upper slidable plate,

two second lifter arms in the form of flat plates, each pivotably secured at one end to said upper plate and pivotably secured at the other end to said lower slidable plate, each of said second lifter arms sloping in the same direction with a positive slope,

each of said first and second lifter arms having a central axis about which the arm pivots,

each of said second lifter arms being aligned with two of said first lifter arms as an operating unit, with the central axes of all of the lifter arms in a unit being aligned and with a pivot pin seated in the ailgned central axes of the lifter arms of each unit, and

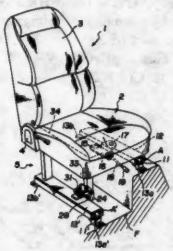
means for moving said upper slidable plate to cause said lifter arms to pivot about their central axes and thus raise or lower said upper plate and the apparatus supported thereby with respect to said base plate.

4,565,344

SEAT ADJUSTMENT DEVICE FOR A VEHICLE SEAT

Masahide Iwami, Akishima, Japan, assignor to Tachikawa Spring Co. Ltd., Japan

Filed Dec. 6, 1983, Ser. No. 558,532
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—429 **7 Claims**



1. A seat adjustment device for seats used in vehicles of the type including a pair of rail assemblies, each rail assembly formed by slidably combining a fixed-side rail fixed to the floor of the vehicle and a movable-side rail mounted to the seat, said seat adjustment device comprising:

a stepped lock mechanism provided in one of said pair of rail assemblies,

a fine-pitched lock mechanism provided in the other of said pair of rail assemblies, and

connecting means for cooperatively connecting said stepped and fine-pitched lock mechanisms with each other, wherein

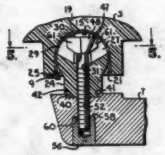
said fine-pitched lock mechanism includes (a) a lock plate having a toothed portion rigidly associated with said other rail assembly, (b) a link including a toothed body adapted to be intermeshed with said toothed portion of said lock plate, wherein said toothed portion of said lock plate and said toothed body are intermeshed with one another by means for providing a toggle action.

4,565,345

MIRROR ASSEMBLY

Arthur R. Templeman, Stillwell, Kans., assignor to Peterson Manufacturing Company, Grandview, Mo.

Continuation of Ser. No. 317,835, Nov. 3, 1981, Pat. No. 4,520,983. This application Mar. 7, 1985, Ser. No. 709,605
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.[4] A47G *1/24*
U.S. Cl. 248—481 **1 Claim**



1. A mirror assembly for use with a vehicle comprising:

(a) a mirror housing;

(b) a mirror retainably held in said housing;

(c) a support member adapted to be securely mounted to a vehicle; and

(d) a ball and socket arrangement connecting said housing and said support member, said ball and socket arrangement comprising:

(1) a socket extending into a first of said housing or support member and having an inner surface;

(2) a socket liner snugly mateable in said socket in contact with said socket inner surface; said socket liner including a neck and a concave expandable member receiving cavity extending inwardly of said neck; said expandable member receiving cavity being generally continuous and covering a majority of said socket when said socket liner is positioned within said socket;

(3) retention means to snugly hold said socket liner within said socket so as to interfere with removal of said socket liner from said socket;

(4) said retention means comprises a lug on a first of said socket liner or said socket and an aperture mateable with said lug on a second of said socket liner or said socket;

(5) an expandable member including a head and a shank; said expandable member head being slidably received in said socket through said neck when said expandable member is not expanded and frictionally contacting said socket liner when said expandable member is expanded so as to operably retain said head in said expandable member receiving cavity;

(6) connector means to connect said expandable member shank to a second of said housing or said support member; and

(7) biasing means to selectively urge said expandable member head into tight engagement with said socket liner.

4,565,346

ADJUSTABLE BRACKET MOUNT

Ivan J. Edwards, 1200 Holiday Pl., Bossier City, La. 71112

Filed Sep. 6, 1983, Ser. No. 529,484
Int. Cl.[4] H01Q *1/00*
U.S. Cl. 248—558 **1 Claim**

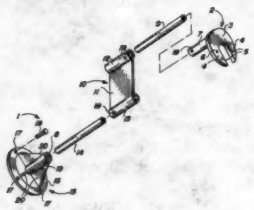
1. In a satellite antenna having an antenna dish and a feed assembly, an adjustable bracket mount for supporting the feed assembly above the antenna dish, comprising:

(a) a base characterized by a base flange for mounting on the antenna dish, said base characterized by an elongated, hollow base receptacle secured to said base flange and

receptacle supports bracing said base receptacle to said base in spaced relationship;

(b) a round bottom support in telescoping cooperation with said base receptacle and a first allen screw threadably cooperating with said base and selectively engaging said bottom support for removably securing said bottom support to said base receptacle;

(c) an offset bracket having a round bottom support collar in telescoping cooperation with said bottom support above said base and a second allen screw threadably cooperating with said bottom support collar and selectively engaging said bottom support for removably securing said bottom support in said bottom support collar; a round top support collar spaced from said bottom support collar; and a flat web spacing said top support collar in a first horizontal plane located at the center transverse axis of said top



support collar and said bottom support collar in a second horizontal plane located at the center transverse axis of said bottom support collar;

(d) a round top support in telescoping cooperation with said top support collar and a third allen screw threadably cooperating with said top support collar and selectively engaging said top support for removably securing said top support in said top support collar; and

(e) a top bracket having a round to bracket collar in telescoping cooperating with said top support and a pair of elongated plate fingers extending in substantially parallel relationship with respect to each other from said top bracket, and a fourth allen screw threadibly cooperating with said top bracket collar and selectively engaging said top support for removably securing said top support in said top bracket collar.

4,565,347

MONOLITHIC PRECAST INVERT SYSTEM

Jack Ditcher, Langhorne, Pa., assignor to A-Lok Products, Inc., Tullytown, Pa.

Filed Jul. 19, 1983, Ser. No. 515,130
Int. Cl.[4] B28B *7/30, 21/88*
U.S. Cl. 249—83 **11 Claims**

1. Apparatus for forming a manhole base comprising:

inner and outer mold members defining an interior volume having a cylindrical shape;

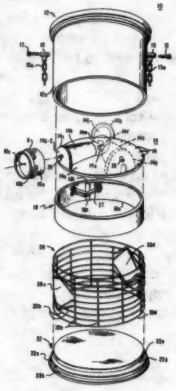
gasket retaining assemblies arranged between said mold members for retaining a gasket to be molded into the manhole base and for forming openings in said manhole base member;

an invert-forming member supported on said inner mold member and having an invert-forming surface;

said invert-forming member having a first elongated invert-forming section arranged on said invert-forming surface;

a second swingable elongated invert-forming section swingably mounted at a central point upon the invert-forming surface of said invert-forming member and having an inner end arranged a spaced distance from the adjacent end of said first invert-forming section;

hollow shell means having a substantially U-shaped cross-section and a shape conforming to the angle formed by the longitudinal axes of said first and second invert-forming sections and having an open bottom end removably positioned upon said invert-forming surface and within the gap region between the adjacent ends of said sections for filling said gap region to define a continuous invert of uniform cross-section along the length of said invert extending between the openings in said manhole base; and



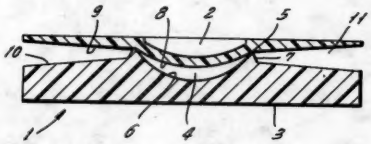
said invert-forming sections each having means for releasably mounting said gasket retainer assemblies thereto during the casting operation.

4,565,348

MOLD FOR MAKING CONTACT LENSES, THE MALE MOLD MEMBER BEING MORE FLEXIBLE THAN THE FEMALE MOLD MEMBER

Hans-Ole Larsen, Farum, Denmark, assignor to Mia-Lens Production A/S, Copenhagen, Denmark

Continuation-in-part of Ser. No. 360,167, Mar. 19, 1982, Pat. No. 4,495,313. This application Nov. 7, 1983, Ser. No. 549,702
Int. Cl.[4] B29C *1/14;* **B29D** *31/00*
U.S. Cl. 249—122 **12 Claims**



1. A lens mold assembly comprising a female mold section having a concave optical surface terminating in a peripherally extending annular flange, the surface of said flange forming a sharp edge at the intersection with said concave optical surface;

a male mold section having a substantially spherical convex optical surface terminating in a peripherally extending annular flange;

the maximum outside diameter of the convex surface of said male mold section being greater than the maximum inside diameter of the concave surface of said female mold section, the facing surfaces of said peripherally extending annular flanges of said female and male mold sections being spaced apart; and one of said female or male mold sections having relatively greater flexibility than the other section whereby compensation for shrinkage during polymerization of monomers within the mold cavity is afforded by said relatively more flexible mold section, said

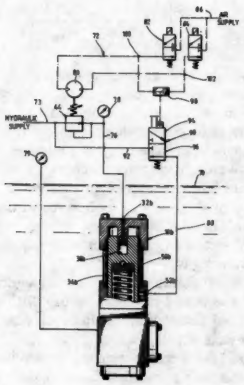
female mold section having a raised sharp-edged ring extending above said extending flange surface about a female mold cavity, the sharp edge of said ring being engagable with said spherical convex optical surface such that a portion of said spherical convex optical surface extends outwardly of a line of contact between said convex optical surface and the sharp edge of said ring.

4,565,349

FAIL SAFE HYDRAULIC PILOTED PRESSURE REDUCING AND REGULATING VALVE

Jerry B. Tomlin, Sugar Land, Tex., assignor to Koomey, Inc., Brookshire, Tex.

Filed Mar. 20, 1984, Ser. No. 591,369
Int. Cl.⁴ G05D *16/00*
U.S. Cl. 251—29 **7 Claims**



1. In a hydraulic pilot pressure reducing and regulating valve having a body and a control piston therein, the improvement of a fail safe means for holding the valve at the last selected operating pressure in the event of loss of control signals comprising,

a pilot piston in said body and adapted to be connected to hydraulic pilot pressure,

spring means between the pilot piston and the control piston whereby the valve is regulated in response to hydraulic pilot pressure,

a rod connected to the pilot piston,

a locking sleeve normally gripping the rod and releasably locking the rod and pilot piston against movement,

a hydraulic pressure port in communication with the space between the rod and the sleeve for releasing the rod from the sleeve upon application of pressure to said port,

said port and said pilot piston separately connected to a hydraulic supply and a control system, and

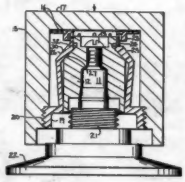
said control system including means for controlling the application of the hydraulic supply to said port and said piston, said means connecting the hydraulic supply to the port for releasing the locking sleeve when the hydraulic supply to the piston is changing, but venting the hydraulic supply to its port when hydraulic supply to the piston is static thereby allowing the locking sleeve to lock for maintaining the valve in its last selected operating pressure.

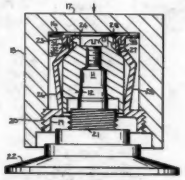
4,565,350

HANDLE ASSEMBLY

Roy J. Rozek, Plymouth, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Jan. 2, 1985, Ser. No. 688,342
Int. Cl.⁴ F16K *31/60*
U.S. Cl. 251—292 **19 Claims**





1. A handle assembly for attachment to a rotatable stem, comprising;

a stem adapter suitable to fit over the stem and be fixed axially relative thereto to rotate therewith;

a handle adapter mounted over said stem adapter for rotation therewith;

a handle mounted over said handle adapter;

said handle adapter being axially fixed relative to said handle;

a retaining member mounted between said handle and said handle adapter, said retaining member being inwardly resiliently biased towards said stem adapter; and

means for resilient camming engagement between said handle adapter, stem adapter and retaining member whereby the handle may be fixed against outward movement relative to the stem adapter and then unfixed against outward movement relative to the stem adapter by sequential inward movement of the handle to a locking position, followed by further inward movement of the handle to a releasing position, followed by outward movement of the handle to remove it from the stem adapter.

4,565,351

METHOD FOR INSTALLING CABLE USING AN INNER DUCT

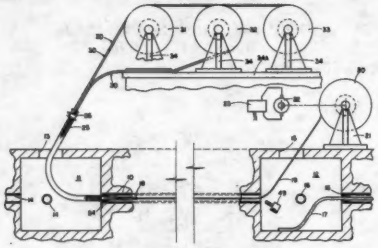
Allen C. Conti, Garfield Heights, and Armand R. Conti, Youngstown, both of Ohio, assignors to Arnco Corporation, Youngstown, Ohio

Filed Jun. 28, 1984, Ser. No. 625,657
Int. Cl.⁴ E21C *29/16*
U.S. Cl. 254—134.3 FT **20 Claims**

1. A method for installing a transmission cable in a selected length of a duct comprising the steps of:

selecting a length of an inner duct which can fit inside said duct, said inner duct having a wall surface with protrud-

ing ribs extending in the direction of the length of the inner duct,



installing the inner duct inside the duct to extend along the length thereof, and

installing a transmission cable in said inner duct.

4,565,352

WINCH DRIVE

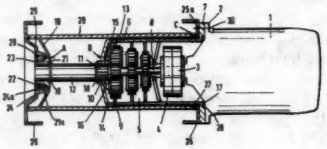
Heinz Hasselmann, Hagen-Emst; Volkmar Kunze, Wetter, and Harald Bitsch, Witten, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 538,951

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240345

Int. Cl.[4] B66D *1/22*; B66F *3/00*

U.S. Cl. 254—344 **10 Claims**



1. A winch drive including a winch drum, a planetary transmission gear in the drum having input and output shafts, and a motor having a drive shaft arranged at one axial end of the drum, the improvement comprising:

a stationary casing for the transmission gear projecting into the drum;

roller means in direct engagement with an end portion for journalling the drum directly on one end of said casing itself;

coupling means for connecting the drive shaft of the motor to the input shaft of the transmission gear inside said casing;

the output shaft of the planetary gear being oriented towards the respective other axial end of the drum(s);

a web plate disposed and secured to the drum adjacent its other end, and being spaced axially from the casing;

means for connecting the output shaft of the planetary gear to the web plate for providing rotation upon the drum, said output shaft traversing said web plate; and

bearing means disposed adjacent said web plate for journalling the exterior end of said output shaft beyond where it traverses said web plate, said bearing means holding the output shaft against axial displacement.

4,565,353

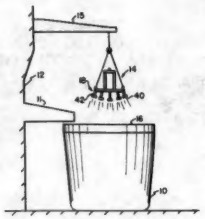
APPARATUS FOR SUPPRESSING FUME FROM A METAL POURING OPERATION

David M. Ball, Peters Township, Washington County, Pa.; Alton E. Sumsion, American Fork, and Zane S. Taylor, Orem, both of Utah, assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 533,897, Sep. 21, 1983, Pat. No. 4,486,230, which is a continuation of Ser. No. 286,395, Jul. 23, 1981, abandoned. This application Aug. 29, 1984, Ser. No. 645,366

Int. Cl.[4] C21C *5/40*

U.S. Cl. 266—147 **6 Claims**



1. In combination with an open-ended vessel for receiving a stream of molten metal therein, apparatus for suppressing the generation of metal oxide fume within the interior of said vessel, said apparatus comprising:

(a) nozzle means operative to eject a mixture of inert gas and atomized water having its discharge disposed to direct said mixture into the interior of said vessel for blanketing the surface of the body of molten metal therein;

(b) first fluid conducting means connecting said nozzle means and extending between said nozzle means and a source of inert gas;

(c) second fluid conducting means extending between a source of water and communicating with the interior of said first fluid conducting means upstream from the connection of said nozzle means;

(d) said second fluid conducting means having its discharge end disposed within said first fluid conducting means with its axis inclined in the direction of the axis of said first fluid conducting means, whereby water discharged into said first fluid conducting means is atomized and intimately mixed with said inert gas prior to discharge from said nozzle means; and

(e) means for suspending said apparatus in operative relation to said vessel open end.

4,565,354

APPARATUS FOR PRODUCING PURIFIED REFRACTORY METAL FROM A CHLORIDE THEREOF

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed May 18, 1983, Ser. No. 496,939

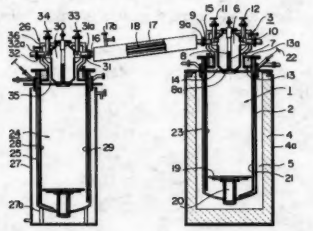
Claims priority, application Japan, May 31, 1982, 57-93698; Oct. 28, 1982, 57-189846

Int. Cl.[4] C22B *4/08*

U.S. Cl. 266—171 **13 Claims**

1. An apparatus for producing purified refractory metal from a chloride thereof, comprising: a conversion/evaporation chamber defined by a first substantially cylindrical vessel means and a detachable top member arranged thereover, said top member in turn comprising therewithin an axial cell closed at the top and having an opening at the bottom, a cavity which is in an abutting relation with the cell and communicable with the vessel means so as to provide a path for vapor stream of magnesium and chloride thereof arising from the vessel means, said cavity at one end consisting of a flanged tubular outlet, a gas jacket which surrounds the cavity and the cell at least a lower portion thereof and which has an access to each gas

source of elevated temperatures and room temperatures, a condensation surface substantially defined by the gas jacket and exposable to the vapor stream, a valve arranged in the cavity for regulation of the vapor stream through the outlet, a vertically movable chloride feeder tube with a closure flange secured therearound and movable together so as to close the opening of the cell, a furnace means which surrounds the vessel means, a condensation chamber which is in side-by-side relation with the conversion/evaporation chamber and defined



by a second substantially cylindrical vessel means and a second top member arranged detachably thereover, said top member having a cavity which is connected by a heatable duct to the outlet of the first said cavity and is open to the second said vessel means so as to form a continuous passage for the vapor stream, and a cooling means for such vessel means by passing water therearound, each of said vessel means consisting of a cylindrical member of a substantially common geometry and being fastened to respective top members with a fastening means compatible to each other.

4,565,355

FLUSHING ARRANGEMENT FOR A METALLURGICAL VESSEL

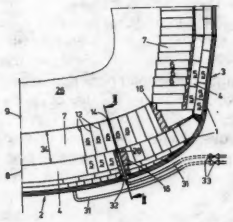
Walter Jilek, and Günter Poferl, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 27, 1984, Ser. No. 624,985

Claims priority, application Austria, Mar. 15, 1984, 865/84

Int. Cl.[4] C21C *5/34*

U.S. Cl. 266—224 **12 Claims**



1. In a flushing arrangement for a metallurgical vessel having a metallic outer shell including a vessel bottom and vessel walls, said vessel bottom and vessel walls being lined with refractory bricks arranged in rows so as to constitute an outer lining and an inner lining provided on said outer lining, a distributor and a plurality of flushing channels departing from said distributor and guided through said inner lining, the improvement wherein said flushing arrangement comprises a metallic flushing plate disposed between neighboring refractory bricks of said inner lining and having a plurality of passage channels for flush gas, said distributor being arranged in said outer lining, said flushing plate extending directly into said distributor, and a supply duct passing through said metallic outer shell of said vessel to said distributor.

4,565,356

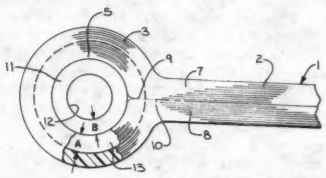
BUSHING CONSTRUCTION FOR A FIBER REINFORCED PLASTIC LEAF SPRING

Herbert W. Nickel, Germantown, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Oct. 13, 1983, Ser. No. 541,443

Int. Cl.[4] F16F *1/18*

U.S. Cl. 267—54 R **9 Claims**



1. A fiber reinforced plastic leaf spring construction comprising, a curved central section and a pair of end sections connected to the respective ends of the central section, a tubular bushing disposed in each end section, said spring comprising a plurality of longitudinally extending substantially continuous strands of fibrous material impregnated with a cured thermosetting resin, said strands disposed in an upper run and a lower run in said central section and said strands extending around said bushings, said upper and lower runs being bonded together flatwise at a neutral axis and the strands of the central section joining the strands of the end sections at a neck area, each bushing including a tubular section having an opening to receive a connecting member, and at least one circumferentially extending rib extending radially outward from said tubular section, said rib disposed at the respective neck area and extending through an arc on either side of said neutral axis, said rib having a pair of spaced side walls and an outer surface, and said strands being disposed in contact with said side walls and extending over said outer surface, said rib increasing the surface area of contact between the strands of fibrous material and the bushing and providing an area of shear stress between the bushing and said strands, thereby aiding in preventing delamination of said spring along said neutral axis when the ends of the spring are subjected to load in service.

4,565,357

QUICK-ACTING CLAMPING DEVICES

Bernhard Stahl, Neunkirchen-Salchendorf, and Horst Böhm, Siegen, both of Fed. Rep. of Germany, assignors to Optima Spanntechnik GmbH, Siegen, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,206

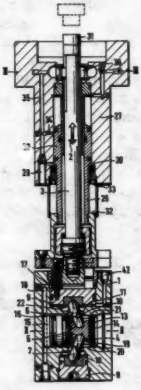
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1982, 3233940

Int. Cl.[4] B23Q *3/08*

U.S. Cl. 269—32 **10 Claims**

1. In a quick-acting clamping device using a pressure fluid for moving the clamping device between released and locked positions thereof, comprising a first axially extending housing (1), a first piston (5) slidably mounted in said first housing for displacement therein transversely of the axial direction of said first housing, a pressure plate (9) located within said first housing in spaced relation from said first piston in the axial direction of said first housing and being displaceable in said first housing in the axial direction thereof, at least one pressure lever (6, 7) located within said first housing supported at one end thereof against said first piston and at the other end thereof against said pressure plate and said pressure lever being displaceable upon the displacement of said first piston between a first position where the clamping device is released and a second position where the clamping device is locked, a first pressure chamber within said first housing with said pressure lever located within said first pressure chamber, an axially

elongated clamping piece (3) having a first end and a second end with the first end located within said first housing and said clamping piece extending axially out of said first housing with the axes of said clamping piece and said first housing in parallel relation and with the second end of said clamping piece being spaced outwardly from said first housing, said clamping piece being axially displaceable between a released position and a locked position, a second piston (26) secured to said first housing and laterally enclosing at least an axially extending portion of said clamping piece between the first and second ends thereof, a second housing (27) laterally enclosing at least an axially extending part of said second piston and spaced in the axial direction of said second piston from said first housing, said second piston being axially displaceable relative to said second housing for axially displacing said clamping piece and said first housing, wherein the improvement comprises that said pressure plate (9) has a first surface facing toward said first piston and an oppositely directed second surface facing toward said second housing, said first piston having a first end surface and a second end surface extending transversely of the direction of displacement of said first piston, a second pressure chamber within said first housing with said first end surface of said first piston located within said second pressure chamber, a third pressure chamber within said first housing with said second end surface of said first piston located within said third



pressure chamber, said pressure plate being in fluid sealed contact with said first housing, said first surface of said pressure plate said pressure chamber and said first end of said first piston being in fluid communication, said second housing having a wall passage (34) therethrough, said second piston being displaceable between a first position when the clamping device is released and a second position where the clamping device is being locked and in its first position said second piston closes said wall passage and in the second position it is displaced out of the path of said wall passage, a rotary mechanism (36) located within said second housing and extending around said clamping piece, a first duct (35) connecting said wall passage to said rotary mechanism and affording flow of the pressure fluid to said rotary mechanism when said second piston is in the second position for rotatably displacing said clamping piece toward the locked position, a second duct in said second housing and in flow communication with said rotary mechanism and extending to said first housing where it is in fluid communication with said first surface of said pressure plate said first pressure chamber and said first end surface of said first piston within said second pressure chamber for directing the pressure fluid from said rotary mechanism to said pressure plate and said first piston after said clamping device has been displaced by said rotary mechanism, a third duct within said first housing providing fluid communication between said second surface of said pressure plate and said second end surface of said first piston located within said third pressure chamber so that in effecting the release of said clamping device initially said first piston is displaced into the first position, and duct means connecting said first housing with said rotary mechanism for flowing the pressure fluid to said rotary mechanism only after said first piston is displaced into the released first position.

4,565,358

PLATE POSITIONING APPARATUS

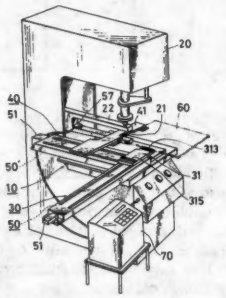
Kinji Hosoi, Machidashi; Hisao Kobayashi, Uenoharamachi; Hiroyuki Takeda, Yokohamashi, and Mitsuyoshi Hibino, Machidashi, all of Japan, assignors to Nihon Early Kabushiki Kaisha (Japan Early Co., Ltd.), Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,118

Claims priority, application Japan, Mar. 12, 1982, 57-33911[U]

Int. Cl.[4] B23Q 3/18

U.S. Cl. 269—60 13 Claims



1. A plate positioning apparatus, comprising:

(a) a first side base frame having a length extending in a first direction;

(b) a first side aligning member, having a side edge, and having a first front edge for contacting a first side of a plate-shaped workpiece, disposed on said first side frame for movement thereon in said first direction, in a plane;

(c) a second side base frame fixed with respect to said first side base frame and having a length extending in a second direction perpendicular to said first direction;

(d) a second side aligning member having a second front edge for contacting a second side of the workpiece, disposed on said second side base frame for movement thereon in said second direction in said plane, said second front edge opposing said side edge, such that said second front edge of said second side aligning member is contactable with said side edge of said first side aligning member;

(e) first drive means for driving said first side aligning member reciprocally along said first side base frame in said first direction;

(f) second drive means for driving said second side aligning member reciprocally along said second side base frame in said second direction toward and away from said first side base frame and said second side aligning member;

(g) means for controlling the driving of said first and second side aligning members by said first and second drive means;

(h) a protrusion having a movable retainer, movably mounted to said second side aligning member in said plane at said second front edge, and means for urging said protrusion forward of said second front edge toward said side edge of said first side aligning member so as to be supportingly engagable with the workpiece at the second side thereof when said first and second side aligning members are spaced from each other, and so as to engage said side edge when said second front edge is free of the workpiece

and said second side aligning member is driven by said second drive means toward said first aligning member; and

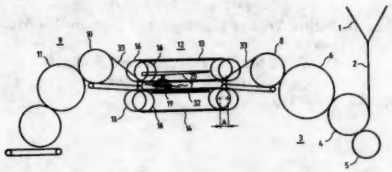
(i) means for receiving said protrusion and said retainer in said second side aligning member completely rearward of said second front edge when said protrusion is engaging said side edge and second side aligning member is driven by said second drive means into engagement at said second front edge with said side edge.

4,565,359

FOLDING APPARATUS FOR A WEB-FED ROTARY PRINTING PRESS

Eduard von Hein, Bern, Switzerland, assignor to Maschinenfabrik WIFAG, Switzerland

Filed Jul. 30, 1984, Ser. No. 636,318
Claims priority, application Sweden, Jul. 27, 1983, 8304156
Int. Cl.⁴ B41L *43/04*
U.S. Cl. 270—41 **7 Claims**



1. A device for producing an accurate second lengthwise fold on a printed copy delivered by a web-fed rotary press which includes first and second groups of spaced apart folding cylinders, comprising a conveying mechanism between said first and second groups of cylinders having at least one turning device forming a nip engageable with each printed copy and being turnable to turn each copy up to 90-about an axis which is perpendicular to a plane containing the copy as it is fed between said groups, said conveying mechanism includes first and second conveyor assemblies mounted one above the other, each of the conveyor assemblies comprising two spaced apart endless conveyor elements which are drivable in a slip-free manner and are trained around return pulleys and including at least one transom interconnecting said spaced apart endless conveyor elements, the return pulleys over which the conveyor elements are guided being offset in a conveying direction relatively and wherein said transoms being hinged to said conveyor elements in a manner such that during an entire cyclic travel they do not change their position relative to the horizontal, a transom of each conveyor assembly carrying said turning device between said conveyor assemblies.

4,565,360

SEPARABLE SINGLE-SHEET FEEDING APPARATUS FOR OFFICE MACHINES

Kurt Rünzi, Küsnachterstrasse 59, CH-8126 Zumikon, Switzerland

Filed Jan. 30, 1984, Ser. No. 575,183
Claims priority, application Switzerland, Nov. 15, 1983, 6129/83
Int. Cl.⁴ B65H *5/06*
U.S. Cl. 271—4 **11 Claims**

1. In combination with a printing-type office machine (3) such as a typewriter, word processor, computer output printer, or the like,

having a rotatable platen (42) and a platen gear (43) coupled to the platen and rotating therewith,

a single-sheet paper-feeding apparatus (1, 2) to feed single paper sheets, from a stack (5) to the office machine in accordance with selected rotation of the platen,

comprising, in accordance with the invention,

a sheet-guiding and separating unit (1) and an adapter frame (2) coupling the sheet-feeding unit (1) to the office machine (3);

said sheet guiding and separating unit (1) including a rotation transmitting connecting means (10);

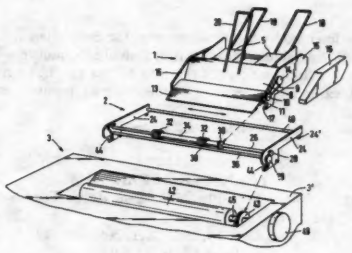
said adapter frame (2) including

a shaft (26) positioned essentially parallel to the platen (42) when assembled to the office machine;

a gear (29) rotatably positioned on the frame (2) and arranged for engagement with the platen gear (43);

a coupling pinion (28) secured to the shaft and in rotation-transmitting coupling with said gear (29);

a drive pinion (30) secured to the shaft and transmitting rotary movement in accordance with said coupling pinion (28) to the sheet-guiding and separating unit (1), said drive pinion (30) being located on said shaft for engagement with the connecting means (10) when the sheet guiding and separating unit (1) is coupled to said adapter frame (2);



means (24, 44, 50) for releasably engaging said adapter frame (2) with said office machine;

wherein the connecting means (10) of the sheet-guiding and separating unit are located in radial alignment for engagement with said drive pinion (30) for transmission of rotary movement from the platen via the platen gear (43), said gear (29), said coupling pinion (28) and said shaft (26), while permitting specific matching of a standard sheet-guiding and separating unit (1) to office machines (3) of different types, manufacturing origin, and dimension;

and wherein said apparatus (1, 2) further includes additional separating means (11, 17; 23) for separately and individually releasably coupling said sheet-guiding and separating unit (1) to the adapter frame at a position effecting said radial alignment of the coupling pinion on the adapter frame (2) and the rotation-transmitting means (10) on said sheet-guiding and separating unit (1).

4,565,361

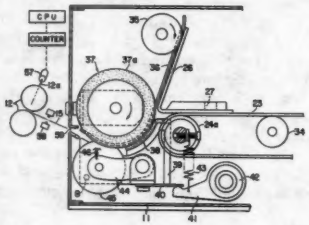
BANK NOTE DISPENSER

Masaru Tanaka, Yokohama, and Hideo Abe, Tokyo, both of Japan, assignors to Fuji Giken Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 10, 1984, Ser. No. 598,792
Claims priority, application Japan, Apr. 11, 1983, 58-62327
Int. Cl.⁴ B65H *7/08*
U.S. Cl. 271—10 **5 Claims**

1. A bank note dispenser for delivering a desirable number of bank notes from a bank note container mounted in a main body thereof comprising: feed rollers for delivering bank notes in the bank note container one at a time; a delivery roller for delivering each bank note delivered from the feed rollers into a bank note delivery passage; pull rollers for clamping the leading edge of each bank note delivered from the delivery roller and pulling each bank note therefrom; a control mechanism carried by a supporting shaft which rotatably carries the delivery roller for driving or stopping the delivery roller; sensor means disposed adjacent to the pull rollers for detecting the passage of each bank note; and an encoder carried by a shaft of one of

the pull rollers; the pulling velocity of the pull rollers being substantially equal to the delivery velocity of the delivery roller, the delivery roller being stopped through the control mechanism while the number of pulses generated from the encoder is started to be counted when the passage of a bank



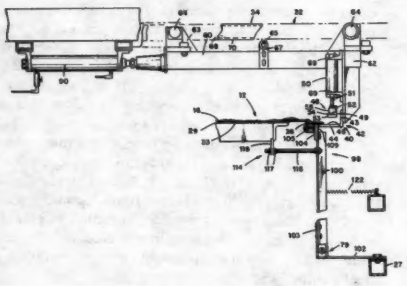
note is detected by the sensor means, the delivery roller receiving a starting signal through the control mechanism when the number of the rotations of the pull rollers reaches a predetermined value to generate a predetermined number of pulses from the encoder.

4,565,362

TRANSFER APPARATUS

Robert T. Wiley, Asheville, N.C., assignor to Tex-nology Systems, Inc., Arden, N.C.

Filed Dec. 14, 1984, Ser. No. 681,912
Int. Cl.[4] B65H *5/00*
U.S. Cl. 271—225 **5 Claims**



1. An apparatus for transferring a sheet of deformable material on a first conveyor to a second conveyor having a direction of movement at right angles to the first conveyor, said sheet having a side edge adjacent said second conveyor aligned with the direction of movement of said first conveyor, said apparatus comprising:

means for clamping said sheet along said side edge, said clamping means having an elongated support surface for supporting said sheet along substantially the entire length of said side edge and an elongated clamping bar which is movable toward and away from said support surface;

means for supporting said clamping means for movement above said second conveyor in a direction parallel to the direction of movement of said second conveyor between a clamping location adjacent said first conveyor and a release location spaced apart from said first conveyor;

an elongated, retractable support plate movable between a support position and a retracted position, said plate being positioned in said support position to underlie substantially the entire length of said side edge when said sheet is on said first conveyor, said support plate being movable transversely of said side edge from said support position to said retracted position where said side edge extends beyond said retractable support plate to permit said side edge to overlie said support surface of said clamping means when said clamping means is in said clamping location; and

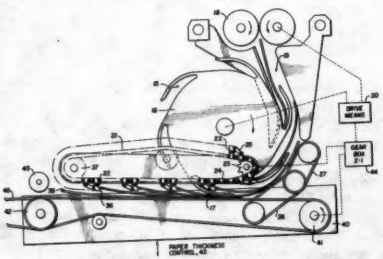
said clamping means being operable to clamp said side edge between said clamping bar and said support surface of said clamping means when in the clamping location, and to release said sheet when said clamping means is in said release location, whereby said sheet is carried by said clamping means as said clamping means moves from said clamping location to said release location and is deposited on said second conveyor.

4,565,363

APPARATUS FOR ACCURATELY SPACING A SEQUENCE OF SHINGLED PAPER SHEET PRODUCTS ON A CONVEYOR

Hans G. Faltin, York, Pa., assignor to Custom-Bilt Machinery, Inc., York, Pa.

Filed May 9, 1984, Ser. No. 608,518
Int. Cl.[4] B65H *29/20*
U.S. Cl. 271—315 **8 Claims**



1. A system for locating a plurality of sheet paper products transferred successively from locations in peripherally located buckets of a rotary fan distributor onto a conveyor belt disposed substantially tangentially to the path of the buckets with the paper products located at precisely spaced locations on the belt in a shingled array, comprising in combination, a set of spaced stripper mechanisms carried by a rotary cyclic stripper belt array synchronously timed to place stripper elements in the path of said buckets to intercept each of the paper products carried in the buckets with the stripper elements travelling at a lower speed than that of the buckets thereby to strip the paper products out of the buckets for deposit on the conveyor belt for transport, stripper belt drive means for rotating the stripper belt about a circular path of predetermined radius disposed adjacent the path of the buckets at a position for intercepting the paper products with the stripper element by the passage of the stripper elements circumferentially about part of said circular path into the path of the buckets carrying the paper products, and stripper element structure comprising an interceptor arm disposed substantially perpendicular from the stripper belt before it enters the circular path supported by a linkage carried by the stripper belt connected to the interceptor arm that maintains the interceptor arm disposed in a posture when it travels about said circular path to insert the interceptor arm substantially perpendicular to the path of paper products carried by the buckets thereby to engage the leading edge of the paper products carried about the bucket path as each successive paper product is presented to strip it from the bucket for deposit on said conveyor belt.

4,565,364

IMPLEMENT FOR MAGIC TRICK FOR FALSELY CUTTING CARD OR THE LIKE

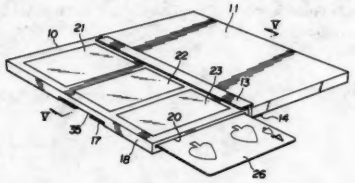
Hiroshi Kondo, Tokyo, Japan, assignor to Tenyo Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,054

Claims priority, application Japan, Aug. 5, 1983, 58-121284[U]

Int. Cl.[4] A63J *21/00*

U.S. Cl. 272—8 N 6 Claims



1. An implement for a magic trick for falsely cutting a card or the like, comprising:

a card having a front and a back, said front having first indicia thereon and said back having second indicia thereon;

a body comprising a first section and a second section, each said section being substantially rectangular and having a predetermined length and a predetermined width; said first and second sections being of substantially equal length and substantially equal width;

said first section comprising a transparent front wall, a first opaque wall, a second opaque wall and a pair of opposed side edge walls, said transparent front wall, said first opaque wall and said second opaque wall connected to said pair of opposed side edge walls so that said transparent front wall, said first opaque wall and said second opaque wall are arranged sequentially one above the other to form spaces therebetween, said transparent front wall, said first opaque wall, and said pair of opposed side edge walls defining a space receivable of said card, said transparent front wall being divided into a plurality of windows, each window having a predetermined length and extending across substantially the entire width of said first section; a first slit formed through one of said pair of opposed side edge walls, said first slit having a length substantially equal to the length of one of said plurality of windows and aligned with said one window, said first slit communicating with said space between said transparent front wall and said first opaque wall; a second slit formed through said one of said pair of opposed side edge walls, said second slit having a length substantially equal to the length of said first slit and aligned with said first slit, said second slit communicaticating with said space between said first opaque wall and said second opaque wall; a third slit formed through the other of said pair of opposed side edge walls, said third slit having a length substantially equal to the length of said second slit and aligned with said second slit, said third slit communicating with said space between said first opaque wall and said second opaque wall;

said second section comprising a front wall, an intermediate wall and a bottom wall and a pair of opposed side walls, said front wall, said intermediate wall and said bottom wall connected to said pair of opposed side walls so that said front wall, said intermediate wall and said bottom wall are arranged sequentially one above the other to form spaces therebetween, said first section and said second section disposed in alignment with one another and having said one of said pair of opposed side edge walls of said first section adjacent one of said pair of opposed side walls of said second section; said intermediate wall having an opening therein having a length substantially equal to the length of said one of said plurality of windows and aligned with said one window, said opening having a width substantially equal to the width of said second section; a fourth slit formed through said one of said pair of opposed side walls, said fourth slit having a length substantially equal to the length of said opening and aligned therewith, said fourth slit communicating with said opening at a position between said front and said intermediate walls; a fifth slit formed through said one of said pair of opposed side walls, said fifth slit having a length substantially equal to the length of said opening and aligned therewith, said fifth slit communicating with said opening at a position between said intermediate and said bottom walls; said fourth and fifth slits aligned with said first and second slits, respectively; and

a covering member, slidably received within said first through fifth slits, said covering member having a length substantially equal to the length of said one of said plurality of windows and a width substantially equal to three times the width of said one of said plurality of windows, said covering member comprising a first false display portion, a second false display portion and a connecting portion intermediate said first and second false display portions, said first portion, said second portion and said connecting portion being of substantially equal widths with said second portion folded back upon said connection portion, the free end of said first false display portion disposed proximate said third slit and the free end of said second false display portion proximate said first slit, whereby by pulling the free end of said first portion the second portion slides over that portion of a card displayed through said one of said plurality of windows.

4,565,365

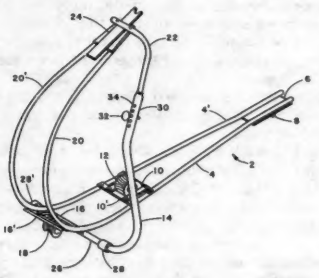
EXERCISE DEVICE

David J. Barkhurst, 3515 Road 92, Pasco, Wash. 99301

Filed May 5, 1983, Ser. No. 491,849

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—73 5 Claims



1. A stand for converting a bicycle into a stationary exercise device comprising:

an elongated horizontal frame of sufficient length to accommodate both the front and the rear wheels of a bicycle;

a support for the front wheel located at the front end of said frame; two rollers spaced longitudinally from each other and positioned such a distance from said support as to receive the rear wheel of said bicycle when the front wheel is on said support;

a single supporting strut extending upwardly from one side only of said frame adjacent said rollers to such a height as to reach the seat stem of said bicycle;

a latch secured to the upper end of said supporting strut constructed and arranged to releasably engage said seat stem;

said frame and strut being so constructed and arranged as to

impart lateral stability to said stand and a bicycle mounted thereon;

said frame being formed of at least two laterally spaced longitudinally extending tubular members;

said support for the front wheel being mounted between said tubular members at their front end and said rollers being journaled between said tubular members;

said tubular members curving upwardly at the rear end of said frame as flexible arcuate portions with a radius sufficient to pass around, rearwardly of, and over, the rear wheel of the bicycle to a point adjacent to the seat stem of the bicycle and connected to said latch;

said supporting strut being adjustable as to length, whereby said strut and said arcuate portions coooerate to permit adjustment of the height of said latch to accommodate bicycles of various sizes.

4,565,366

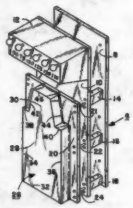
MARTIAL ARTS PRACTICE DEVICE

Thomas G. Struss, Box 321, R.D. 4, Coatesville, Pa. 19320

Filed Feb. 1, 1984, Ser. No. 576,021

Int. Cl.[4] A63B *69/00*

U.S. Cl. 272—76 **10 Claims**



1. A device for use in practice of martial arts comprising:

a rear support;

a padded target having a strikable front surface defined by an outline at least one of the transverse dimensions of which exceeds approximately twelve inches;

means for mounting the target on the support and constraining the target to linear movement toward and away from the support;

resilient means connected between the target and the support for resisting movement of the target toward the support; and

means, actuable by movement of the target toward the support, for establishing at least three ranges of positions of the target and for indicating the maximum extent of movement of the target when struck, by indicating in which of said ranges the target is positioned at the point of its maximum degree of movement toward the support;

in which the means for mounting the target on the support comprises at least three piston and cylinder units, each being located exteriorly with respect to the outline of the strikable front surface of the target and in which an extension of an imaginary cylinder defined by the target outline upon said linear movement of the target falls substantially completely within a multi-sided figure formed by straight lines connecting the axes of said piston and cylinder units.

4,565,367

HAND HELD BODY ENGAGING EXERCISE DEVICE

Robert T. Kaiser, Elyria, Ohio, assignor to Spymark, Inc., Vista, Calif.

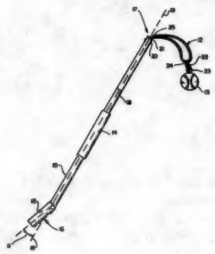
Continuation-in-part of Ser. No. 267,270, May 26, 1981, abandoned. This application Jul. 19, 1983, Ser. No. 515,306

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—126 **16 Claims**

1. A hand-held exercise device adapted for individual use in a controlled environment and which enables an athlete to stimulate rigorous muscular and anatomical movements unique to various physical sports activities without the aid of external exercise machines, said device comprising:

an elongated, rigid, tubular member having a longitudinal axis, a length of at least 26 inches and a diamater no greater than approximately one and one-half inches, gripping means attached to one end of said tubular member for applying force to said tubular member during an exercise, an exercise grip means tethered to the opposite end of said tubular member so as to enable the tubular member to operate as a lever pivoting against the body of the individual when forces are applied to the ends of said tubular member;



an elastic cord having first and second ends, and an unstressed length of at least four inches, said first end being coupled to said opposite end of the tubular member and having elastic properties which permit at least 50% elongation of the cord beyond its unstressed length during exercising; and

said exercise grip means being attached to the second end of the cord and adapted in size and configuration for comfortable use at the hand or foot of the athlete for application of force by the athlete through the exercise device to various parts of the athlete's body.

4,565,368

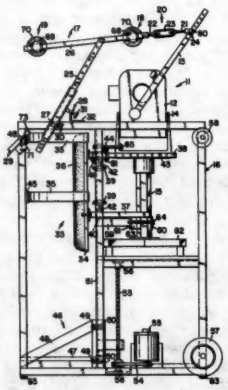
ISOKINETIC EXERCISE AND MONITORING MACHINE

Marlon Boettcher, LaCrescent, Minn., assignor to Gunderson Clinic, LaCrosse, Wis.

Filed Aug. 11, 1983, Ser. No. 522,634

Int. Cl.[4] A63B *21/00*; G01L *5/02*

U.S. Cl. 272—129 **52 Claims**



43. An isokinetic exercise and monitoring machine adapted

to exercise and monitor an individual, the individual having a midsagittal plane, a lower body portion, an upper body portion and a coronal plane, the upper body being rotatable with respect to the lower body about a first axis located substantially in the coronal plane, said machine comprising:

(a) a support frame;

(b) first means for restraining the lower body portion, said first means operatively connected to said support frame;

(c) second means for restraining the upper body portion, said second means being pivotally connected to said support frame, allowing said second restraining means to pivot with respect to said support frame about a second axis, said second axis being substantially parallel to the first axis and the midsagittal plane intersecting said second restraining means at a midpoint of said second restraining means when the individual is restrained by said first and second restraining means;

(d) a dynamometer having a base and a lever arm, said lever arm being pivotally connected to said dynamometer base;

(e) first means for fixedly connecting said dynamometer base to said support frame; and

(f) second means for pivotally connecting said lever arm to said second restraining means, said second connecting means being operatively connected to said second restraining means substantially at said midpoint, whereby movement of the individual's upper body portion causes movement of said second restraining means about said second axis causing said lever arm to pivot on said dynamometer base.

4,565,369

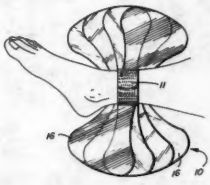
AQUATIC EXERCISING DEVICE

Douglas H. Bedgood, P.O. Box 1820, Idyllwild, Calif. 92349

Filed Apr. 1, 1983, Ser. No. 481,207

Int. Cl.[4] A63B *21/00*

U.S. Cl. 272—130 **12 Claims**



1. A variable resistance aquatic-exercising device for subjecting arms, legs and associated parts of a user's body to desired degrees of stress as the user moves his or her arms or legs through a body of water with the device associated therewith, said variable resistance aquatic exercising device comprising: a plurality of panel means for use in a body of water and for providing an area of contact for water to resist the movement of said device and the leg or arm associated with it, said plurality of panel means disposed in a stacked, generally fan shaped configuration with each of said plurality of panel means overlapping a portion of the adjacent panel means; attaching means for securing each of said panel means together and for adjusting the proportion of overlap of each of said panel means relative to an adjacent one of said panel means to vary the total surface area of said panel means by reducing or increasing the total area of contact of said plurality of panel means with water; and securing means attached to at least one of said panel means for securing said device to the arms or legs of a user.

4,565,370

FOOT HOLDING DEVICE FOR HANGING UPSIDE-DOWN

Tony Christianson, 120 8th St., Manhattan Beach, Calif. 90266

Continuation-in-part of Ser. No. 363,601, Mar. 30, 1981, abandoned. This application Oct. 12, 1982, Ser. No. 434,187

Int. Cl.[4] A63B *23/02*

U.S. Cl. 272—145 **11 Claims**

1. A foot holding device for hanging upside-down comprising:

a single elongated, wide flexible web,

said web being looped so that the two ends thereof overlap with the obverse face of one end facing the reverse face of the other end, said foot being insertable through the resultant loop so that said single web substantially surrounds the ankle adjacent said foot, with said overlapping ends situated at one side of said foot and with the middle portion of said web situated at the opposite side of said foot,

a connector extending through said overlapping ends at said one side of said foot, and

holding means for removable attachment of said device to a structural member, said holding means being coupled to said connector and situated adjacent said overlapping ends at said one side of said foot, so that when said holding means is attached to a structural member, said web and hence said ankle and foot will be supported only on said one side thereof, and wherein said connector is a single connector extending through and connecting said overlapping ends.

4,565,371

RACKET HAVING A HANDLE WITH DIFFERENT STRIKING CHARACTERISTICS ON OPPOSITE SIDES

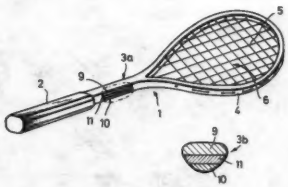
Ulrich Pawlicki, Im Schellental 8, and Wolfgang Schüler, An der Kopfbuche 20, both of D-5024 Pulheim, Fed. Rep. of Germany

Filed Mar. 29, 1984, Ser. No. 594,535

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1983, 3312834

Int. Cl.[4] A63B *49/08*

U.S. Cl. 273—73 J **1 Claim**



1. A tennis racket comprising a hand grip portion, a head carrying a plurality of strings which form a bilateral striking area, and an elongated handle portion extending between said hand grip portion and said head, said handle portion alone having a cross-sectional shape that is asymmetrical about a line extending perpendicular to the longitudinal axis of the racket and lying in a plane parallel to the plane formed by the striking area and composed of a plurality of superposed material layers, each with distinctive, differing elastic properties, said layers

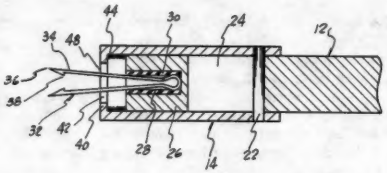
being superposed in the longitudinal direction of the striking area plane with each layer extending across a width of the handle portion, the combination of said asymmetrical shape and said material of different elastic properties on one side of the racket producing striking properties on that side which are different from the striking properties produced by the combination of said asymmetrical shape and said materials of different elastic properties on the opposite side of the racket.

4,565,372

PERSONAL DEFENSE DEVICE

August R. Werft, Venice, Fla., assignor to Allan J. Werft, Chagrin Falls, Ohio, a part interest

Continuation-in-part of Ser. No. 457,758, Jan. 13, 1983, Pat. No. 4,489,943. This application Aug. 31, 1984, Ser. No. 631,450
Int. Cl.[4] F41B *15/06*
U.S. Cl. 273—84 R **32 Claims**



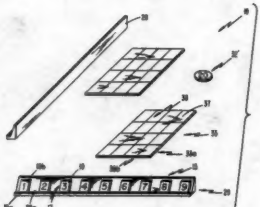
1. A hand held non-lethal personal defense device comprising an elongated handle, a piercing prong member projecting from one end of said handle, a tubular housing slidably disposed over said end of said handle and displaceable from a first position sheathing said piercing member to a second position wherein said piercing member projects from the end of said tubular housing, spring bias means urging said tubular housing to said first position, and means retaining said tubular housing slidably over said handle end, wherein said piercing member has a barb such as to remain attached to a soft material in which said piercing member is inserted and to detach itself from said material upon pulling said handle.

4,565,373

NUMERICAL GUESSING GAME

Bracha B. Ungar, 230 B Hilltop La., Annapolis, Md. 21403

Continuation-in-part of Ser. No. 400,234, Jul. 21, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,220
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—265 **3 Claims**



1. A mathematical game of skill and chance to be played by up to N players, where N is an integer greater than one, comprising:

(a) N sets of data base tiles, each of said data base tile sets including M tiles with numerical indicia numbered consecutively from 1 to M;

(b) (N−1) sets of feedback tiles, each of said feedback tile sets including K tiles with numerical indicia numbered consecutively from 0 to (K−1);

(c) a set of total number tiles including P tiles with numerical indicia numbered consecutively from Q to (P+Q−1);

(d) each of said tile sets having a distinctive visual characteristic identifying it uniquely from the other sets; and

(e) a playing board having: a central designated area having indicia corresponding with the total number tiles for receiving one of the total number tiles, and N player location areas;

each player location area including: a first designated area related to the M tiles of one of the sets of data base tiles and having a size, shape and indicia corresponding with the M tiles of one of the sets of data base tiles for receiving the M tiles of one of the sets of data base tiles, a second designated area related to J out of the M data base tiles in one of the sets of data base tiles and having a size, shape and indicia corresponding with the J tiles in one of the sets of data base tiles for receiving the J tiles in one of the sets of data base tiles, and a third designated area having indicia corresponding with the feedback tiles for receiving one of the feedback tiles in one of the sets of feedback tiles;

$$\text{where } P + Q = \sum_{M-J+1}^{M} n$$

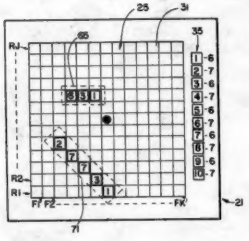
said first, second and third areas including indicia rendering them distinctive from each other.

4,565,374

MATHEMATICAL BOARD GAME APPARATUS

Kyong H. Pak, 2802 Garden Lakes Blvd., Rome, Ga. 30161

Filed Jul. 11, 1983, Ser. No. 512,602
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—272 **1 Claim**



1. A method of playing a mathematical board game by a first player and second player comprising the steps of:

(a) providing a game board including indicia thereon defining a rectangular matrix of playing positions, said rectangular matrix being characterized by J ranks and K files; J and K being positive integers greater than 11;

(b) providing a first plurality of tile pieces, each of said tile pieces being inscribed with a single digit n, n including integer values between and including 1 through 10 such that for n=[1, 2, 3 . . . 10] seven tile pieces of said plurality of tile pieces bear indicia n for n=an even integer, and six tile pieces of said plurality of tile pieces bear indicia n for n=an odd integer, and providing a second like plurality of said tile pieces;

(c) providing said first player with five tile pieces of said first plurality of tile pieces;

(d) providing said second player with five tile pieces of said second like plurality of tile pieces;

(e) said first player and said second player alternately placing one of said tile pieces on one of said playing positions

of said rectangular matrix and drawing a replacement tile from the player's respective plurality of tiles;

(f) providing a score for each particular one of said first player and second player equal to N, wherein

$$N = \sum_{k=1}^{k=m} n_k,\ m = [3,5], \text{ and Remainder } (N/10) = 0;$$

n_k being the value of indicia on each tile piece of a rank, file or diagonally contiguous sequence of said tile pieces, all placed on said rectangular matrix of said game board by said particular one of said players during a plurality of repetitions of step (e); and

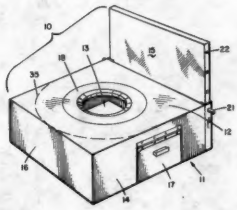
(g) repeating steps (e) and (f) above until a total score for one of said first player or second player equals a predetermined number.

4,565,375

GAME APPARATUS

Donald W. Dresel, 10213 Overhill Dr., Santa Ana, Calif. 92705

Filed Feb. 21, 1985, Ser. No. 703,610
Int. Cl.⁴ A63B *67/06*
U.S. Cl. 273—401 **15 Claims**



1. A game apparatus comprising,

a hollow receptacle including at least an upper surface,

an aperture through said upper surface,

said aperture including a beveled edge at said upper surface,

a bankboard at one end of said receptacle and extending above said upper surface, and

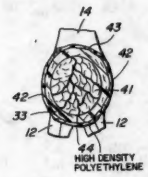
a least one object which can be tossed at said receptacle with the intention of passing said object through said aperture directly or after a carom off of said bankboard.

4,565,376

ANIMAL SIMULATING THREE DIMENSIONAL ARCHERY TARGET AND METHOD OF MANUFACTURE

Lionel Croll, 2468 Coral St., Philadelphia, Pa. 19125

Filed Mar. 28, 1985, Ser. No. 717,289
Int. Cl.⁴ F41J *3/00*
U.S. Cl. 273—408 **1 Claim**



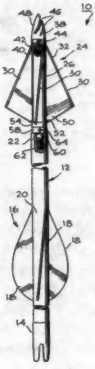
1. An archery target comprising a form retaining wall fabricated of lengths of transversely gathered thermoplastic film wound to assume the desired shape, cover sheeting of thermoplastic material configured to cover the desired shape and heat sealed in position overlying said wall, said wall being hollow, and additional lengths of transversely gathered plastic film folded upon itself and occupying the hollow of said wall, said wall and additional lengths being fabricated of low density polyethylene film, said cover sheeting being fabricated of high density polyethylene film.

4,565,377

HUNTING ARROW AND BROADHEAD

Fernando V. Troncoso, Jr., and Vincent F. Troncoso, both of 14090-6100 Rd., Montrose, Colo. 81401

Filed Nov. 29, 1984, Ser. No. 676,268
Int. Cl.⁴ F41B *5/02*
U.S. Cl. 273—422 **12 Claims**



1. An improved hunting arrow, said arrow comprising, in combination:

a. an elongated arrow shaft;

b. stabilizing arrow fletching connected to the rear end of the shaft, said fletching comprising a plurality of spaced rear stabilizing vanes extending generally longitudinally and peripheral of said shaft, said rear vanes being disposed diagonally in a selected direction relative to the longitudinal axis of said shaft; and,

c. a broadhead connected to the front of said shaft, said broadhead comprising a longitudinally extending central core, a plurality of spaced sharp blades the bases of which are releasably received in slots in said core and which extend peripherally thereof, a point releasably screwed to the front end of said core and defining a blade front tip-receiving rear space, the front tips of said blades being releasably held in said rear space by said point, said core having a rear ring slideably received thereover, the rear end of each said blade having a ring-receiving notch, a portion of said blade rear end being releasably seated within said ring, the rear of said core terminating in a fitting secured thereto and having an annular shoulder against which said ring rests and which limits the rearward movement of said ring relative to said core, said fitting being releasably screwed to the front of said shaft, and a plurality of spaced front stabilizing vanes connected to said core, extending generally longitudinally and peripherally thereof and disposed diagonally in the same direction as said rear stabilizing vanes to increase rotation and accuracy of said arrow.

4,565,378

SHAFT SEAL WITH LIP LIFTING IN RESPONSE TO SHAFT ROTATION AND GAS PRESSURE

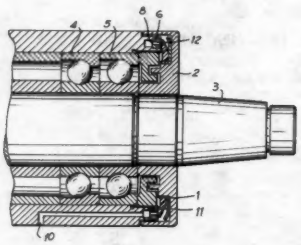
Heinz Wehrfritz, Kalchreuth, and Michael Brunke, Nuremberg, both of Fed. Rep. of Germany, assignors to GMN Georg Muller Nurnberg GmbH, Fed. Rep. of Germany

Filed Dec. 17, 1984, Ser. No. 682,375

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346073

Int. Cl.[4] F16J 15/32, 15/34, 15/46

U.S. Cl. 277—3 9 Claims



1. Apparatus for effecting a seal between a first rotary machine component and a second machine component comprising:

a sealing element coupled to said first machine component for rotation therewith, said sealing element including an elastic lip portion having a first sealing surface;

a sealing portion associated with said second machine component, said sealing portion having a second sealing surface adapted to form a seal with said first sealing surface;

said first sealing surface of said elastic lip portion forming a contact seal with said second sealing surface over a region of mutual engagement when said first machine component is stationary or rotating slowly with respect to said second machine component, said first sealing surface of said elastic lip portion tending to lift from said second sealing surface to form a non-contact seal upon a predeterminable increase in the rate at which said first machine component rotates with respect to said second machine component; and

means for introducing compressed gas into a region between said rotary elastic lip portion and said second sealing surface to form a gas cushion therebetween to facilitate lifting of said first sealing surface from said second sealing surface.

4,565,379

MAGNETIC FLUID SEAL

Heribert Ballhaus, Nuremberg, Fed. Rep. of Germany, assignor to GMN Georg Muller Nurnberg GmbH, Fed. Rep. of Germany

Filed Jan. 14, 1985, Ser. No. 691,436

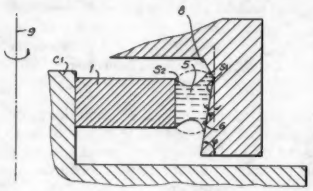
Claims priority, application Fed. Rep. of Germany, May 26, 1984, 3419812

Int. Cl.[4] F16J 15/42

U.S. Cl. 277—25 5 Claims

1. In apparatus including a rotatable outer rotor, said outer rotor being rotatable about an axis of rotation and having an inner surface defining a sealing gap with an outer periphery of a substantially disc-shaped magnet, magnetic liquid being situated in said sealing gap to form a sealing devvice, the improvement comprising:

said inner surface of said outer rotor is inclined so that in a cross-section through a plane containing the axis of rotation of the rotor, said inner surface forms a first angle with said axis of rotation, whereby said magnetic liquid is retained in said sealing gap by the reaction forces to centrifugal forces acting on said magnetic liquid in addition to the magnetic flux of said disc-shaped magnet.



4,565,380

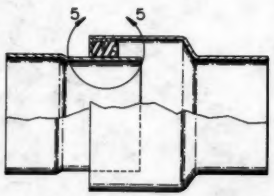
SEAL WITH TWO SEALING PORTIONS HAVING FLANGE RECEIVING OPENING THEREBETWEEN

Ira R. Newman, Sun Valley; Kenneth N. Minshull, Agoura, and Kenneth J. McGilp, Hesperia, all of Calif., assignors to Precision Tube Bending, Santa Fe Springs, Calif.

Filed Nov. 21, 1984, Ser. No. 673,581

Int. Cl.[4] F16J 15/12

U.S. Cl. 277—178 12 Claims



1. An integral ring-shaped seal adapted to be carried at the end of a connector housing and provide two spaced-apart sealing portions, said two spaced-apart sealing portions being connected by a web, and said two spaced-apart sealing portions together with said web providing therebetween an opening adapted to receive a flange located in proximity to the end of the connector housing, at least one of said two spaced-apart sealing portions having a cut-out axially disposed away from said opening to provide increased resiliency and wear resistance.

4,565,381

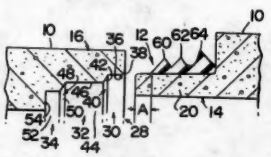
SELF ALIGNING CONCRETE PIPE WITH CONFIGURED JOINT

C. R. Joelson, 2501 Bayshore Rd., Nokomis, Fla. 33555

Filed Apr. 24, 1984, Ser. No. 603,343

Int. Cl.[4] F16J 15/10

U.S. Cl. 277—207 A 12 Claims



1. A self aligning concrete pipe to improve the seal of the joint cooperatively formed between adjacent concrete pipes wherein each concrete pipe includes a male and female joint member formed on opposite ends thereof to operatively en-

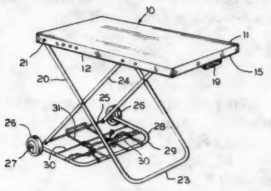
gage the corresponding joint member formed on the next adjacent concrete pine to form the joint therebetween, said male joint member including a tongue element of predetermined peripheral configuration extending outwardly from the concrete pipe, said female joint member including a groove element extending inwardly from the opposite end of the concrete pipe comprising an initial alignment stage and final seat recess stage, said initial alignment stage comprising an outer alignment recess including a horizontal and vertical alignment step having an inwardly inclined surface, said final seat recess stage comprising an inner seat recess such that as adjacent concrete pipes are assembled the outer end of said tongue element enters said outer alignment recess to horizontally and vertically align the adjacent concrete pipes by engaging said inwardly inclined plane of said horizontal and vertical alignment step permitting the tongue element to enter said inner seat recess to form the joint therebetween.

4,565,382

COMBINED PORTABLE TABLE AND HAND TRUCK

William S. Sherman, 132 Belle Ave., Highland Park, Ill. 60035

Filed Mar. 23, 1984, Ser. No. 592,593
Int. Cl.[4] B62B *1/12*
U.S. Cl. 280—47.18 **16 Claims**



1. A portable table and hand truck comprising:

a planar table top having first and second ends and having side edges, and having depending portions extending from one surface of said table top at said side and end edges;

a first U-shaped member having a pair of legs and a bight portion therebetween for supporting said top, said U-shaped member being hingedly connected at the end portions of its legs to said depending portions extending from said one surface at the side edges thereof adjacent the first end of said table top, and being selectively erectable and collapsible with respect to the table top;

a second U-shaped member having a pair of legs and a bight portion therebetween for supporting said top, said second U-shaped member being hingedly connected to said first U-shaped member and selectively erectable and collapsible with said first U-shaped member with respect to said table top, the bight portion of the second U-shaped member being oriented towards said planar table top, said second U-shaped member being collapsible so as to reside in substantially the same plane adjacent the underside of said table top;

a plurality of stop means each positioned adjacent the said one surface of said table top and spaced from each other for selectively erecting said table top in a plurality of height differing positions by receiving the bight portion of said second U-shaped member in abutting relation with one of said plurality of stop means and said table top;

wheel supporting means mounted to an outer end portion of the legs of said second U-shaped member for rotatably supporting a pair of wheels thereon;

a pair of ground surface-engaging wheels rotatably supported by said wheel supporting means;

said table top having handle means secured to the depending portion extending from the second end of said top;

a load supporting rack hingedly connected to said wheel supporting means so as to be rotatable thereabout, said load supporting rack comprising a third U-shaped member having the end portions of its legs rotatably mounted to said wheel supporting means; and

load supporting rack retaining means mounted on said load supporting rack for retaining said rack in selected positions with respect to said table top;

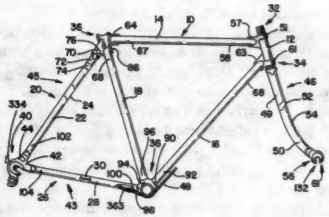
wherein said portable table and hand truck is erectable as a table in a plurality of height differing and transportable positions with the said first and second U-shaped members erected, wherein said portable table and hand truck is erectable as a hand truck with the said load supporting rack erected and the said first and second U-shaped members collapsed, and wherein said portable table and truck is collapsible into a substantially flat condition for storage and for transportation with said load supporting rack and said first and second U-shaped members collapsed.

4,565,383

FRONT AND REAR WHEEL DROP OUTS FOR BICYCLE FRAMES

Timothy S. Isaac, Fall River, Wis., assignor to Trek Bicycle Corporation, Waterloo, Wis.

Filed Feb. 3, 1984, Ser. No. 576,571
Int. Cl.[4] B62K *19/30*
U.S. Cl. 280—276 **8 Claims**



1. A bicycle wheel drop out bracket comprising:

a generally flat body defining opposed side walls that define opposed face surfacings of the body that are coextensive with and define a generally planar plate portion of said body,

said body in said plate portion thereof defining a drop out slot that extends from an open end thereof across the thickness of said body portion to define a bicycle wheel axle mounting way in said body that extends crosswise thereof,

said body plate portion defining a relatively narrow marginal edging that connects said side walls along the perimeter of said body plate portion,

said slot interrupting and extending across said edging to form said slot open end,

said body including a stub portion substantially aligned with and projecting away from said body planar plate portion,

said stub portion defining a socketed end portion forming an imperforate side wall structure in circumambient relation thereabout and that is in substantially squared relation with a substantially flat floor that extends crosswise of the plane of said body plate portion,

said stub portion side wall structure including a flange projecting outwardly of and generally parallel to said end portion and normally of said floor.

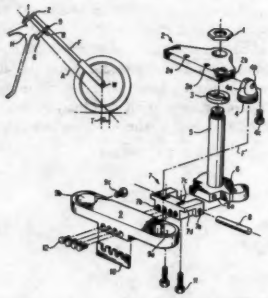
said vent passage extending through said body to said slot.

4,565,384

MOTORCYCLE FORK TREE

Torbjörn Dehnisch, Vittangigatan 31, S-162 20 Vällingby, Sweden

Filed Dec. 12, 1983, Ser. No. 560,181
Int. Cl.[4] B62K *21/04*
U.S. Cl. 280—279 **7 Claims**



1. A fork tree assembly for a motorcycle, said fork tree assembly comprising:

a steering axle rotatably mountable in a steering head of said motorcycle along a steering axis;

a top tree piece fixed to a top end of said steering axle;

a bottom inner tree piece fixed to a bottom end of said steering axle, said bottom inner piece having a first bore along a first axis transverse to said steering axis;

a bottom intermediate tree piece pivotally mounted on said bottom inner piece about said first axis, said bottom intermediate piece having guide portions extending in a first direction orthogonal to said steering axis and first axis;

a bottom outer tree piece to which fork tubes are securable, said bottom outer piece having a first portion shaped to correspond to said guide portions so that said guide portions can slidably engage said first portion along said first direction;

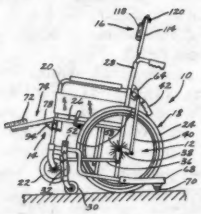
and means for selectively securing said bottom intermediate and bottom outer tree pieces to one another relative to said first direction, whereby said bottom intermediate and bottom outer tree pieces are fixed to one another with selective adjustment in said first direction.

4,565,385

TILTABLE SUPPORTING WHEELCHAIR

Marvin A. Morford, 1815 Ashworth Rd., West Des Moines, Iowa 50265

Filed Jan. 16, 1984, Ser. No. 570,977
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—289 WC **5 Claims**



1. A tiltable supporting wheelchair mechanism mounted on a conventional wheelchair, the wheelchair having a frame with a seat, back support and two front spaced wheels and two rear spaced wheels, comprising:

a tilting mechanism means for the controllable raising of the front of the wheelchair above the floor, said means having a pair of front support wheels and a cross frame structure, the cross frame structure being pivotally mounted at one end to the frame of the wheelchair and to the front support wheels at its opposite end and pivotally connected to a lever, the lever attached to the wheelchair and moveable to cause the pivotal movement of the cross frame from a retracted position to an extended position wherein in the extended position, the front of the wheelchair is lifted off the floor by the support wheels contacting the floor; rear supports, said supports connected to the frame of the wheelchair and extend rearwardly from the frame to contact the floor upon the operation of the tilting mechanism in raising the front of the wheelchair to its highest point above the floor;

a leg support means for the selective supporting of an occupant's legs, the leg support means being mounted on the frame of the wheelchair and includes a leg pad mounted on a cross frame, the cross frame being pivotally mounted to the frame of the wheelchair and selectively pivotal between a vertical and horizontal position;

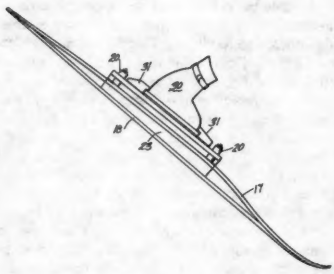
a head rest, the head rest mounted to the wheelchair and includes a head support, the head support being secured to the back support of the wheelchair.

4,565,386

SKI

Lawrence Crainich, Stratford, Conn., assignor to Design Standards Corporation, Bridgeport, Conn.

Filed Feb. 1, 1984, Ser. No. 575,771
Int. Cl.[4] A63C *5/04*
U.S. Cl. 280—602 **14 Claims**



1. A ski comprising an upper binding portion to which the ski boot of a skier is intended to be fastened, a lower sliding surface having forward, rearward and side edges, a generally centrally located longitudinal slot extending through said ski and terminating before said forward and rearward edges to form a partially slit ski with integral forward and rearward edges and side-by-side inside and outside sliding portions having mating surfaces at the cut faces wherein said cut faces are cut at an angle, and means to flex the inside sliding portion to partially overlap the inside and outside sliding portions when the skier is negotiating a turn on said inside sliding portion.

4,565,387

RUNNING-SURFACE COATING LAYER FOR SKIS

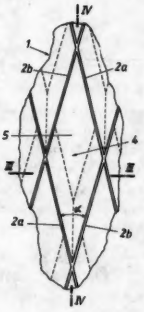
Werner Feichtlbauer, Antiesenhofen, Austria, assignor to Trak Incorporated, Wardhill, Mass.

Filed Oct. 29, 1984, Ser. No. 665,627
Int. Cl.[4] A63C *5/00, 7/06, 7/00*
U.S. Cl. 280—604 **1 Claim**

1. In a ski having a front end, a rear end and an undersurface,

said undersurface comprising a coating layer which coating layer includes a first side secured to the underside of the ski and a second side defining a running surface directed away from the underside of the ski, said second side being provided with a multiplicity of tongues which are aligned in the longitudinal direction of the ski and which constitute a climbing aid, each tongue terminating towards the rear end of the ski in a pointed end capable of being bent upwards, wherein the improvement comprises:

the tongues are defined by two families of parallel cuts provided in the second side and directed inwardly from the running surface toward the first side but terminating



short of the latter, the two families of cuts intersecting each other on the second side of the running surface at an acute angle, the two families of cuts further being inclined in opposite directions at an acute angle to the second side of the running surface and at an angle to a plane normal to the second side of the running surface and imparting to each tongue a pair of rhomboidal side surfaces diverging with respect to each other from the tip of that tongue, each tongue thereby increasing in thickness from its tip in the direction of the front end of the ski as well as from each of its side edges in the direction of the other side edge.

4,565,388

STRUCTURE FOR CONNECTING A HANDLE TO THE PUSH RODS OF A BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Apr. 6, 1984, Ser. No. 597,727

Claims priority, application Japan, Apr. 8, 1983, 58-52838[U]

Int. Cl.⁴ B62B *7/06*

U.S. Cl. 280—644 **6 Claims**

1. In a structure for connecting a handle to push rods of a baby carriage for maintaining a predetermined distance between said push rods when the baby carriage is in the open state said distance being narrower when the baby carriage is in the closed state, said handle forming a push rod-connecting rod **(2)** which is foldable in at least one place in a middle portion **(3)** thereof for changing said distance between the push rods **(1)** by a folding action of said push rodconnecting rod, the improvement comprising, an upwardly open cylinder **(6)** at each upper end of each of said push rods **(1)**, an elongated throughgoing hole **(7)** extending over a predetermined angular range through a lateral wall of said upwardly open cylinder, said push rod-connecting rod **(2)** having two end portions **(4)** inserted in said respective cylinder **(6)** whereby said end portion is capable of rotating around a longitudinal axis of said cylinder **(6)**, each end portion **(4)** of said push rod-connecting rod **(2)** comprising a guide pin **(5)** extending through said elongated throughgoing hole **(7)** to project outwardly , a locking sleeve **(10)** surrounding said cylinder and movable relative to said cylinder **(6)** only in the direction of said longitudinal axis , said locking sleeve **(10)** comprising an elongated hole passage **(11)** having a vertically extending locking portion **(12)** and a guide portion **(13)** extending obliquely upwardly from a lower end to an upper end of said locking portion **(12)**, said elongated hole passage **(11)** receiving said guide pin **(5)**, a spring **(15)** interposed between said cylinder **(6)** and said locking sleeve **(10)** for constantly urging said locking sleeve **(10)** downwardly relative to said cylinder **(6)**, an anchoring mechanism **(9, 16)** for temporarily anchoring said locking sleeve **(10)** to said cylinder **(6)** when said locking sleeve **(10)** is moved upwardly against the force of said spring **(15)** to an upper end position , whereby in an open state of the baby carriage, when said guide pin **(5)** is positioned at said upper end of said locking portion **(12)** of said elongated hole passage **(11)**, the rotation of each end portion **(4)** of said push rod-connecting rod **(2)** relative to said cylinder **(6)** is inhibited for locking the baby carriage in its open state, in which said locking sleeve **(10)** is maintained in an upward position by said anchoring mechanism, and wherein, when said guide pin **(5)** is positioned at said lower end of said locking portion **(12)** of said elongated hole passage **(11)**, each end portion **(4)** of said push rod-connecting rod **(2)** is rotatable relative to said cylinder **(6)** for closing said baby carriage, whereby said guide pin **(5)** passes through said guide portion **(13)** of said elongated hole passage **(11)** for moving said locking sleeve **(10)** downwardly while said guide pin **(5)** is contacting a lower side of said guide portion **(13)** thereby canceling the locking imposed by said anchoring mechanism **(9, 16)**, and wherein, for opening said baby carriage, said guide pin **(5)** moves in said elongated hole passage **(11)** while contacting an upper side of said guide portion **(13)** of said elongated hole passage **(11)** until said guide pin approaches said locking portion **(12)**, whereupon said spring **(15)** moves said locking sleeve **(10)** downwardly for positioning said guide pin **(5)** at the upper end of said locking portion **(12)** to thereby lock the baby carriage in the open state.

4,565,389

VEHICLE SUSPENSION SYSTEM

Yozo Kami, Saitama; Masaaki Minakawa, and Kanji Kubo, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Shibuya, Japan

Filed Nov. 23, 1983, Ser. No. 554,515

Claims priority, application Japan, Nov. 24, 1982, 57-177930[U]; Nov. 24, 1982, 57-177931[U]

Int. Cl.⁴ B60G *3/00*

U.S. Cl. 280—663 **13 Claims**

1. A vehicle suspension system comprising:

(a) a wheel;

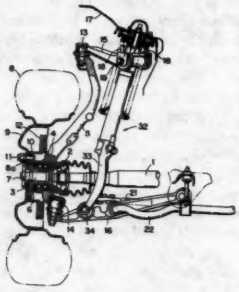
(b) a knuckle arm supporting said wheel;

(c) a vehicle body having a frame;

(d) upper and lower arms connecting said knuckle arm to said frame, said lower arm having an attachment aperture defined therethrough substantially longitudinally of said vehicle body;

(e) a radius rod and a stabilizer each having one end attached to said lower arm in the vicinity of the end of said lower arm connection to said knuckle arm; and

(f) one of said radius rod and said stabilizer being coupled to the surface of said lower arm, the other of said radius rod



and said stabilizer being inserted in said attachment aperture and coupled to said lower arm therein.

4,565,390

ROCKER ARM MOUNTING

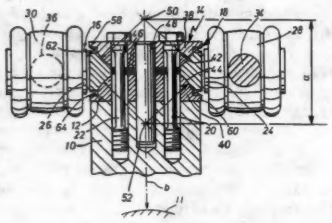
Josef Merkle, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 10, 1984, Ser. No. 639,330

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1983, 3328822

Int. Cl.[4] B60G *11/14*

U.S. Cl. 280—726 **10 Claims**



1. A bearing assembly for interconnecting a fixed fixture pin means supportably connectible with a vehicle axle body and at least two guide rod means, each having one end connected to relatively fixed vehicle body parts, said bearing assembly comprising:

rocker arm means connected to the respective opposite ends of said guide rod means; and

at least two disc means surrounding said fixture pin means and defining a respective mutually oppositely facing clamping surface means engageable with the rocker arm means for holding same in position relative to said pin means.

4,565,391

DRIVING FORCE TRANSMITTING MEMBER FOR PASSIVE SEAT BELT

Osamu Kawai, Kanagawa, Japan, assignor to NSK-Warner K.K., Japan

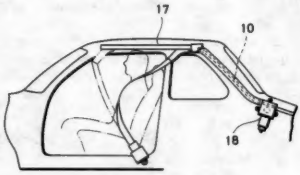
Filed Mar. 12, 1984, Ser. No. 588,395

Claims priority, application Japan, Mar. 17, 1983, 38837[U]

Int. Cl.[4] B60R *21/10*

U.S. Cl. 280—804 **16 Claims**

1. In a tape-like driving force transmitting member suitable for use in a passive seat belt, a runner connected to the driving force transmitting member to guide a webbing automatically between a first position and a second position, and drive means adapted to drive the driving force transmitting member in the lengthwise direction thereof, the improvement which comprises that a plurality of notches is spacedly fomed respectively



along both side edges of the driving force transmitting member and the drive means includes a gear defining a plurality of teeth, which is brought into meshing engagement with the notches of the drive force transmitting member, with a predetermined interval in the circumferential direction thereof and another predetermined interval in the axial direction thereof.

4,565,392

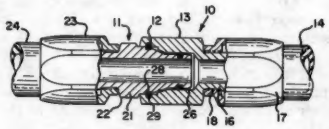
QUICK CONNECT COUPLING

Gerrard N. Vyse, Bedford, Tex., assignor to Stratoflex, Inc., Fort Worth, Tex.

Filed Jul. 9, 1984, Ser. No. 629,060

Int. Cl.[4] F16L *55/00*

U.S. Cl. 285—23 **11 Claims**



1. A quick connect coupling comprising:

(a) an outer receptacle means having an internal opening and an annular outer groove formed in the inner surface of said opening;

(b) an inner insert means having an annular inner groove formed in the outer surface thereof;

(c) said receptacle means being adapted to be assembled with said insert means in a position where said insert means is in said opening and said inner and outer grooves are substantially radially aligned,

(d) a split ring positioned in said outer groove prior to said assembly and extending between said inner and outer grooves after said assembly; and

(e) a fluid at least partially filling said outer groove behind and around said ring, said fluid being sufficiently viscous to substantially hold said ring against movement in said outer groove prior to said assembly.

4,565,393

PIPE JOINT

Gerald G. Greaves, Wichita Falls, Tex., assignor to Ameron Inc., Monterey Park, Calif.

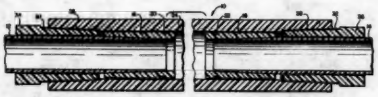
Filed Nov. 5, 1982, Ser. No. 439,440

Int. Cl.[4] F16L *17/02*

U.S. Cl. 285—107 **6 Claims**

5. In a plastic pipe joint comprising a sleeve member secured to the end of a pipe section, a tubular body member surrounding said sleeve member, and a seal member disposed intermediate the sleeve member and the body member, the seal member being in engagement with the outer surface of the sleeve mem-

ber and the inner surface of the body member for providing a peripheral seal therebetween, the improvement wherein the sleeve member and the body member comprise wound fiber-reinforced thermosetting resin components, with the sleeve member including fibers having a different winding orientation



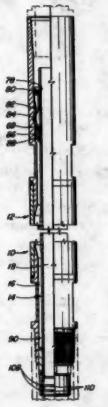
from the fibers of the body member for permitting the sleeve member to expand relative to the body member in response to increases in internal pipe pressure, so that the seal member is pressed into tighter engagement with said inner and outer surfaces to tighten said peripheral seal.

4,565,394

DUAL-WALL DRILL PIPE

Floyd W. Becker, R.R. 9 Site 1, Box 15, Calgary, Alberta, Canada

Filed Sep. 10, 1982, Ser. No. 416,699
Claims priority, application Canada, Feb. 24, 1982, 396949
Int. Cl.⁴ F16L *39/00*
U.S. Cl. 285—141 **9 Claims**



1. A dual-wall drill pipe section for a drill string, formed from a plurality of serially connected drill pipe sections, for use in drilling in earth formations, said drill pipe section comprising, in combination:

an outer pipe member having an internally threaded box end, an externally threaded pin end, internal shoulder means extending inwardly from the bore of said outer pipe member, and recess means formed in said bore;

an inner pipe member adapted to be concentrically disposed within and telescopingly movable inwardly and outwardly of said outer pipe member, external shoulder means extending outwardly of the outer periphery of said inner pipe member and being engageable with said internal shoulder means for axially locating said inner pipe member within said outer pipe member and for supporting said inner pipe member in said outer pipe member when said section is in an upright position;

detent means associated with said inner and outer pipe members for releasably retaining said inner pipe member within said outer pipe member and permitting relative axial displacement of said pipe members upon application of predetermined opposed axial forces to said members,

said detent means including a plurality of generally V-shaped leaf springs, an end of one arm of each said spring being secured to the outer periphery of said inner pipe member, the end of the other arm of each said spring being abuttingly and slidingly engageable with the outer periphery of said inner pipe member and the apex of each said spring means being spaced from said periphery and frictionally engageable with said recess means; and

spacer means secured to each end of said periphery of said inner pipe member and being abuttingly engageable with said bore of said outer pipe member for maintaining concentricity between said inner and outer pipe members;

said spacer means including a plurality of angularly spaced longitudinally extending plates extending outwardly of said periphery and each having a longitudinal surface abuttingly engageable with said bore of said outer pipe.

4,565,395

EXTENSIBLE SWIVEL

Richard D. Rockwood, Marshfield, and Bernard J. Ruskin, Marblehead, both of Mass., assignors to Chapman Manufacturing Company, Inc., Avon, Mass.

Filed Apr. 2, 1984, Ser. No. 595,237
Int. Cl.⁴ F16L *27/00*; F16D *1/12*
U.S. Cl. 285—282 **20 Claims**

1. A swivel comprising:

(a) a spindle;

(b) a stop ring having an arcuate segment and secured about said spindle;

(c) a double-leg ring member having integral arcuate segments and mounted about said spindle in operative association with said stop ring;

(d) a stop bushing having an arcuate segment and a channel and mounted about said spindle in operative association with said double-leg ring member; and

(e) an end ring secured about said spindle to contain said stop bushing and said double-leg ring member about said spindle between it and said stop ring.

4,565,396

PNEUMATIC CONTACT LENS INSERTION DEVICE

John M. Larimer, 311 Lindsey La., Pittsburgh, Pa. 15239

Filed Mar. 11, 1985, Ser. No. 710,707
Int. Cl.⁴ A61F *9/00*
U.S. Cl. 294—1.2 **8 Claims**

1. A hand held mechanical device for pneumatically inserting contact lenses onto the surface of the eye with little or no

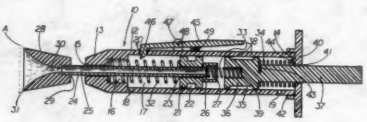
handling of the contact lenses by the fingers during the insertion, said device comprising;

a cylindrical main body being open in the rear and tapered at the front, with said tapered front having a hole adapted to receive freely therein a hollow sliding shaft, said hole extends axially into the inside chamber of the said main body, and said main body having an end cap adapted to fit thereon, with said end cap having an axially centered hole passsing therethrough, and said main body having provided on it's outer surface a means of securing thereto a trigger assembly, and said main body having two vent holes with one said vent hole disposed forward and passing radially through the wall of the said main body, and said second vent hole being disposed rearward and passing radially through the wall of the said main body, and said main body having a square hole passing radially through the wall of the said main body and being disposed to fit therethrough a trigger tip;

a piston adapted to slide freely within the said main body and having a means for forming a partial gas seal between the said piston and the inside wall of the said main body, and said piston having a radial groove around it's girth providing a means of locking the said piston in a specified position within the said main body, and said piston having an axially centered hole through it's center so that a tubular shaft can slide freely therethrough;

a first coil spring disposed within the said main body forward of the said piston and providing a rearward biasing force to the said piston, and said first spring having a means of being retained axially centered within the said main body;

a cocking plunger disposed within the rear area of the said



main body and slideable therein, and said cocking plunger having a head with a means for forming a partial gas seal between the outside surface of the said cocking plunger head and the inside surface of the said main body, and said plunger having a stem extending outward and rearward through the said end cap hole;

a second coil spring disposed within the said main body forward of the said end cap and coiling around the said cocking plunger stem and ending rearward of the said cocking plunger head, and said second spring having a means of being anchored at both ends with the forward end anchored to the said cocking plunger and the rearward end anchored to the said end cap, said second coil spring providing a rearward biasing force to the said cocking plunger;

a hollow sliding shaft having a longitudinal passage for air flow therethrough, with said shaft disposed through the said hole in the front tapered end of the said main body, freely slideable therethrough and extending into the interior of the said main body through the said hole in the said piston into the area between the said piston and the said cocking plunger head, and said shaft is provided with a flange on the rearward end to limit the rearward travel of the said piston thereon, and with said flange having an inward and forward tapering lip to guide a buffer spring;

a third coil spring disposed within the said main body between the forward end of the said cocking plunger head and the rear flanged end of the said sliding shaft, providing a forward biasing force limiting the rearward travel of the said sliding shaft, and said third spring having a substantially weaker biasing force than the said first spring, and said third spring having a means of being anchored within and guided by a hole provided axially centered in the forward face of the said cocking plunger head;

a trigger mechanism externally mounted on the said main body disposed in such a position so as to be lockable internally with the said piston groove when the said piston is in it's forward most position and said first spring is fully compressed;

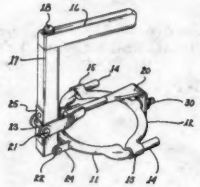
a soft rubber cup disposed at the forward end of the said sliding shaft providing a means of mounting and retaining thereon a contact lens, and said cup having an internal shape designed to disperse a charge of air flowing outward from the said passage of the said hollow sliding shaft;

4,565,397

HAND-GRIPPABLE CARRIER FOR TRANSPORTING CONTAINERS

Walter L. Keen, Rte. 1 - Box 80-27, Tolleson, Ariz. 85353

Filed Sep. 10, 1984, Ser. No. 649,269
Int. Cl.[4] A47L *23/28*; A47J *45/00*
U.S. Cl. 294—34 **10 Claims**



1. A carrier for transporting a container comprising:

(a) first and second arcuate encircling means removably contacting a region of said container when drawn together, each of said encircling means having opposing ends;

(b) linear extension means mounted on the opposing ends of one of the encircling means;

(c) guide means mounted on the opposing ends of the other of the encircling means for slidably receiving the linear extension means therein, said guide means comprising a sleeve surrounding said linear extension means, said encircling means, extension means and guide means substantially residing within the same plane during relative movement of said first and second encircling means;

(d) a handle rotatably coupled to said first arcuate encircling means;

(e) a supporting means having first and second ends, said first end being rotatably coupled to said handle and extending outwardly therefrom; and

(f) means for coupling the second end of the supporting means and the second encircling means, the movement of said handle providing relative movement between said first and second encircling means for removably contacting a region of the container being transported.

4,565,398

MULTI-PURPOSE COMPOUND HAND TOOL

Charlemagne Poulin, 1432 Defense Hwy., Gambrills, Md. 21054

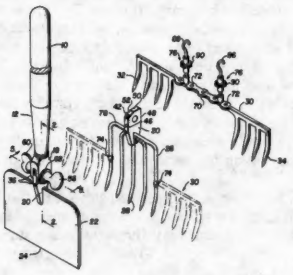
Filed Oct. 11, 1984, Ser. No. 659,888
Int. Cl.[4] A01B *1/20*; A01D *11/06*
U.S. Cl. 294—52 **12 Claims**

1. A multi-purpose compound hand tool, comprising:

a handle terminating at one end in bifurcated coupling means including a substantially flat inner surface adjacent a pair of opposing end portions, said flat inner surface being perpendicular to the longitudinal axis of the handle and including a single dimple type of recess which is offset from said longitudinal axis,

a plurality of implements selectively attachable to said handle, each implement including a like connecting member

having a solid body portion of a constant relatively thin thickness which fits between said pair of opposing end portions of said bifurcated coupling means, said body portion additionally having generally flat, mutually perpendicular top and side body surfaces separated by a relatively shorter intermediate generally flat inclined body surface, and defining an acute angle less than 45° with said top surface, said flat surfaces being selectively positioned to abut and be held in a fixed position against



said flat inner surface of said bifurcated coupling means providing thereby adjustment of the angle of a particular said implement relative to the handle, and with said inclined body surface including a single nub type of projection engageable with said dimple type of recess in an inclined position of said implement on said handle and further having a height so as to freely fit beneath said flat inner surface of said bifurcated coupling means in both a vertical and horizontal position of said implement on said handle out of engagement with said dimple type of recess.

4,565,399

DISPOSABLE LIFTING LOOP AND METHOD OF LIFTING A CARGO LOAD THEREWITH

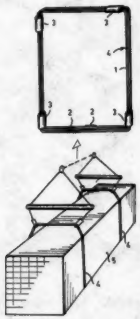
W. Charles Cranston, Kotka, Finland, assignor to Cranston Ky, Kotka, Finland

Continuation of Ser. No. 467,473, Feb. 17, 1983, abandoned, which is a continuation of Ser. No. 189,076, Sep. 22, 1980, abandoned. This application Aug. 1, 1984, Ser. No. 637,321

Claims priority, application Finland, Sep. 25, 1979, 792982

Int. Cl.⁴ B66C *1/18*

U.S. Cl. 294—74 **11 Claims**



1. A disposable lifting loop arrangement for use only once in lifting a load, after which it is disposed of an not reused, thereby generally reducing the time required for a loading operation, while also enhancing the safety of the load lifting operation, comprising: an endless steel wire loop (4) which is formed from a plurality of disposable prefabricated semi-rigid steel wire rings (1) bound together in a group by binding means at a plurality of spaced locations around the wire loop, each semi-rigid steel wire ring having a substantially circular cross-sectional shape, and the semi-rigid steel wire rings having a larger circumference that the circumference of the load, such that the loop can be easily placed around the load, and the rings being designed to be deformed to conform to the shape of the load, particularly the lower corners of the load to minimize damage thereto, while also being sufficiently rigid to retain a predetermined configuration of the loop such that the loop can extend beyond the load to facilitate the application thereto and the removal therefrom of a lifting mechanism, with the construction of the loop from the disposable steel wire rings allowing the loop to be formed on site for use with a variety of different size and shape loads because of the ability to select the number of steel wire rings forming the loop.

4,565,400

DOUBLE HAND FOR AN INDUSTRIAL ROBOT

Selichiro Nakashima, Hino; Nobutoshi Torii, Hachioji, and Akihiro Terada, Hino, all of Japan, assignors to Fanuc Ltd., Tokyo, Japan

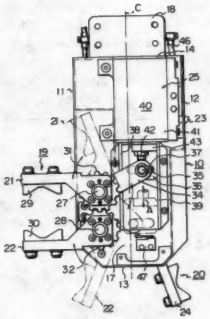
PCT No. PCT/JP83/00262, § 371 Date Apr. 10, 1984, § 102(e) Date Apr. 10, 1984, PCT Pub. No. WO84/00713, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 11, 1983, Ser. No. 605,027

Claims priority, application Japan, Aug. 11, 1982, 57-138403

Int. Cl.⁴ B25J *15/00*

U.S. Cl. 294—88 **4 Claims**



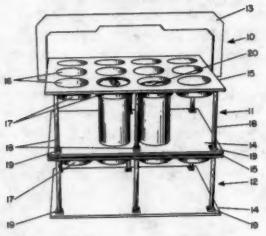
1. A double hand for an industrial robot, comprising a hand body; two sets of work clamping means and two sets of actuators for opening and closing the work clamping means respectively; said hand body having a rear end attachable to the free end of the robot wrist of an industrial robot, a front end and opposite sides extending between the front end and the rear end; each of said work clamping means having a pair of gripping fingers; said pairs of gripping fingers being supported pivotally at the respective roots thereof on said hand body near the opposite sides of said hand body, respectively, for turning motion; and each of said actuators being adapted so as to turn the associated pair of the gripping fingers about respective centers provided in the roots of said gripping fingers in opposite directions to extend said work clamping means and said fingers thereon from and retract said work clamping means and said fingers thereon into the opposite sides of said hand body.

4,565,401

CARRIER FOR EMPTY CONTAINERS

John A. Young, Jr., 372 Central Park West, New York, N.Y. 10025

Filed Jun. 18, 1984, Ser. No. 621,507
Int. Cl.[4] B65D *6/40, 6/08*
U.S. Cl. 294—159 **1 Claim**



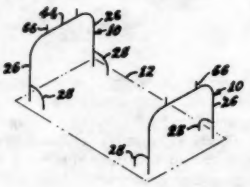
1. A carrier for empty containers, comprising: a first and second holder unit, each said holder unit including a flat tray member, a container positioning member having a plurality of openings to recieve the upper portions of containers positioned on said tray member, said positioning member having a projection surrounding each opening which extends in a direction toward said tray member to receive the upper portion of a container supported on said tray member, a plurality of support members affixed at opposite ends to said tray member and said positioning member to hold them in spaced relation, receptacle means formed at opposite ends of the lower surface of said positioning member; a handle having projections adapted to be received in said receptacle of one of said holder units; a plurality of fabric gripping elements mounted at selected locations on the top surface of said positioning member of said first holder unit; and a corresponding plurality of fabric gripping elements positioned at corresponding locations on the bottom surface of said tray member of said second holder unit so as to permit said first and said second holder units to be releasably joined in stacked relationship.

4,565,402

TRUCK BED SUPPORT FRAME UNIT

David B. Hopkins, R.R. 8, Box 90, Frankfort, Ind. 46041

Filed Oct. 27, 1983, Ser. No. 545,836
Int. Cl.[4] B60P *3/00*
U.S. Cl. 296—3 **9 Claims**



1. A support unit for a support frame means for an open-bed truck or van, such as for providing for the carrying of objects in a supported manner above the truck bed even though the truck may not be provided with stake pockets for supporting stake members which facilitate the elevated carry of such objects, the support frame means comprising one or more support units depending upon the amount and/or length of fore-and-aft support is desired, each support unit comprising:

a pair of mounting base means;

first connection means, for rigidly connecting each of the mounting base means to the truck bed, each respective one thereof adjacent a side of the truck bed;

a pair of support column means;

a pair of brace means;

second connection means, for rigidly connecting an associated one of the support column means and brace means to a respective one of the mounting base means;

third connection means for rigidly interconnecting one of the brace means to a respective one of the support column means at a position above its bottom;

fourth connection means, for rigidly interconnecting the two support column means at a high elevation thereof;

the said associated ones of the first connection means, the second connection means, and the third connection means, and the associated one of the brace means, co-operating to provide fore-and-aft stability to the support unit, the brace means extending in a generally fore-and-aft direction when assembled onto the mounting base means and the mounting base means is installed onto the truck bed;

and the said associated ones of each set of the first connection means, the second connection means, and the fourth connection means and the associated support column means co-operating to provide transverse stability to the support unit,

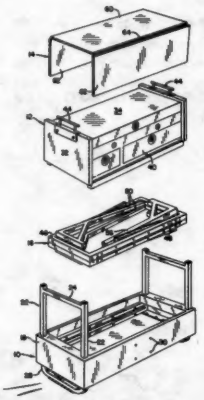
in a combination in which the portion of the second connection means which interconnects the support column means with the mounting base means includes a lug means upstanding from the mounting base means, and the adjacent portion of the support column means is a hollow tubular component which supportingly receives the lug means.

4,565,403

MARKSMAN'S COLLAPSIBLE, PORTABLE, SHOOTING BENCH AND TABLE ASSEMBLY

Robert R. Brown, 18865 Oak Tree Ave., Oregon City, Oreg. 97045

Filed Feb. 13, 1984, Ser. No. 579,309
Int. Cl.[4] A47B *83/02, 3/14*
U.S. Cl. 297—3 **8 Claims**



1. A collapsible, portable, bench assembly comprising:

(a) a bench provided with legs on each end extending downward from the underside thereof, said underside being open to provide a storage compartment between said legs, the bench being shiftable between an upright, use position and an inverted storage position,

(b) a chest contoured and dimensioned for nesting in the compartment between the bench legs,

(c) a foldable table top adjustable between an opened out use position, and a folded, storage position, wherein it encloses the chest when the chest is nested in the compartment,

(d) a collapsible leg assembly adjustable between an extended use position and a collapsed storage position wherein the leg assembly is insertable in the bench compartment for storage,

(e) fastening means releasably fastening the table top in its opened out use position to the leg assembly in extended use position, and

(f) attaching means releasably attaching the bench in its upright use position to selected ones of the legs of the leg assembly in its extended use position.

4,565,404

HINGE

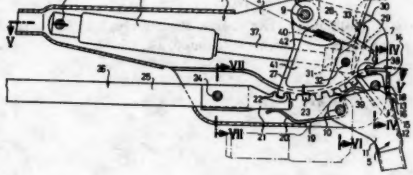
Joerg Rauschenberger, Gartenstrasse 8, 7144 Asperg, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,987

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129089

Int. Cl.⁴ A47C *4/00*; B60N *1/02*

U.S. Cl. 297—19 **5 Claims**



1. A hinge, particularly of an article for lying, sitting and the like, comprising

a hinge shell;

a hinge part supporting a rest member, said hinge part being turnable relative to said hinge shell between and arrestable in a plurality of positions;

a power element turning said hinge part in closing direction in forced manner and arresting said hinge part;

an intermediate element turnably mounted on said hinge shell and connected with said power element, said intermediate element cooperating with said hinge part so that it is coupled with said hinge part in one turning region of said hinge part between a substantially horizontal and a substantially vertical position of the rest member, and said hinge part is separately turnable in a remaining turning region;

a foot part lockable in an arrestable turning region and turnably supported on said hinge shell;

and a foot catch turnably mounted on said hinge shell and connected with said power element, said intermediate element

arranged to lock said foot part, said foot catch retaining said foot part in an arrestable turning region of said intermediate element and releasing the same in another position of the latter, said foot catch being controlled by said intermediate element.

4,565,405

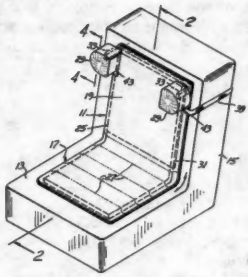
SEAT MAT ASSEMBLY WITH HEADRESTS

Camille Mayer, 12315 Kilbourne, Detroit, Mich. 48213

Filed Jun. 8, 1984, Ser. No. 618,877

Int. Cl.⁴ A47C *7/02*

U.S. Cl. 297—230 **2 Claims**



1. A seat and backrest mat mountable upon a seat having a backrest comprising elongated opposed top and bottom covers of a predetermined shape;

a layer of resilient material of the same shape interposed between the covers;

continuous securing means extending around the perimeters of and peripherally interconnecting said covers and resilient layer, defining a seat portion and a connected back portion;

an elongated stiffener liner sheet interposed between one of said covers and resilient layer of at least said back portion and along its opposite sides secured thereto by said securing means, said stiffener sheet having sufficient flexibility to permit selective folding and redefinition of the connected seat portion and back portion as the mat is slid along the seat and backrest to match the height of the person using the mat;

a pair of laterally spaced headrest supports secured to said stiffener sheet at its top and projecting forwardly therefrom;

and a pair of formed enlarged laterally spaced resilient headrests each having a central rearwardly opening aperture snugly receiving and fixedly supported and secured upon said headrest supports respectively.

4,565,406

LUMBAR SUPPORT DEVICE

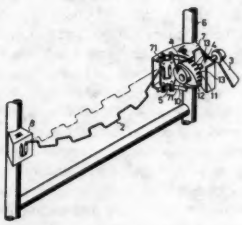
Hiroshi Suzuki, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1985, Ser. No. 715,086

Claims priority, application Japan, Mar. 29, 1984, 59-63060

Int. Cl.⁴ A47C *7/46*

U.S. Cl. 297—284 **5 Claims**



1. A lumbar support device for adjusting the hardness of the lumbar support portion of a seat back by rotating a cam to

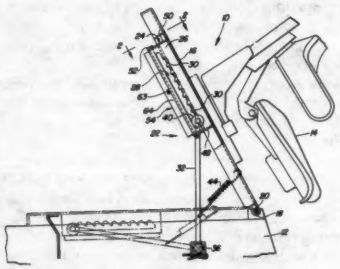
move one end of an elastic member extending the right and left sides of a back frame and thus varying the curvature of said elastic member, wherein said cam comprises a smaller cam portion with which said one end of said elastic member can be engaged and a larger cam portion engaged with said smaller cam portion and mounted to the same shaft therewith, and, in the side surface of said larger cam portion facing said smaller cam portion, there is provided a guide section having a concavo-convex curved surface with respect to the direction of said elastic member.

4,565,407

SEAT HOLDUP MECHANISM

Peter F. Brautigam, Kewaskum, Wis., assignor to Deere & Company, Moline, Ill.

Filed Dec. 9, 1983, Ser. No. 559,661
Int. Cl.[4] A47C *1/02*
U.S. Cl. 297—335 3 Claims



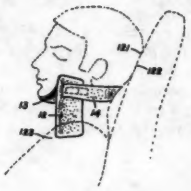
1. In a vehicle seat assembly including a support frame; a seat platform pivotally mounted to the support frame for movement about a transverse axis between a lowered operative position and a raised inoperative position and a seat holdup mechanism including a prop link extending between the support frame and seat platform for selectively holding the seat platform in its raised inoperative position, an improved seat holdup mechanism comprising: said prop link being mounted to said frame for vertical swinging movement about a second axis paralleling said first axis and having a transversely bent free end; a latch bracket secured to a bottom surface of said platform and including a depending elongate flange extending in crosswise relationship to said first axis; said flange having a guide slot provided therein and having an upper edge shaped to define a plurality of notches; said transversely bent end being received in said guide slot; biasing means normally urging said link end against said upper edge of said guide slot; said notches being shaped to permit the seat platform to be raised without interference by said link but for receiving said end upon release of the seat platform when it is in a lifted position; operator means mounted for selectively engaging and pushing said link end away from said upper edge to thereby release the prop link and permit the seat platform to be lowered; and said operator means comprising an angle plate extending parallel to said guide slot and having a leg engaged with said link end; said angle plate being mounted to the platform for pivoting about a third axis paralleling said guide slot; and a release rod being connected to the angle plate and being selectively operable for pivoting the plate against the link end for pushing the latter away from the upper edge of the guide slot.

4,565,408

PORTABLE HEAD SUPPORT FOR SLEEPING OR RESTING IN A SITTING POSITION

Maria Palley, 18 Dean St., Madison, N.J. 07940

Filed Nov. 9, 1983, Ser. No. 550,450
Int. Cl.[4] A47C *16/00, 7/36*
U.S. Cl. 297—393 5 Claims



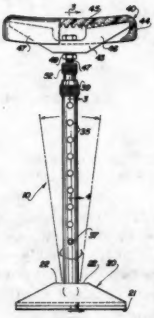
1. A device for supporting the human head, comprising two elongate sheaths formed from flexible material and interconnected by a flexible chin supporting strap, a thin, elongate substantially rigid support plate received in each said sheath, and an additional flexible strap secured at each end to a respective elongate sheath to extend in a direction substantially normal to the elongate direction of each said sheath, whereby the device is positioned with the plates located on opposite sides of a user's neck and resting on the user's shoulder-collarbone area, the flexible chin supporting strap underlines and supports the chin of the user, and the additional flexible strap extends behind and embraces the neck to retain the device in chin supporting position.

4,565,409

BODY SUPPORT APPARATUS

Gary G. Hollonbeck, 181 E. Rte. 38, and Hugh E. Cooper, 1253 Tilton Park Dr., both of Rochelle, Ill. 61068

Filed Nov. 28, 1983, Ser. No. 555,385
Int. Cl.[4] A47C *7/54*
U.S. Cl. 297—411 5 Claims



1. Body support apparatus including a pair of supporting implements which in use are arranged vertically on opposite sides of a person to support the body weight of the person when in a seated position and thereby to relieve pressure on the spinal column of the person, each of said implements comprising

a base member having a planar underside defining a wide area of contact between the base member and the seat on which the person sits in close relation to the side of said person;

an upright assembly of adjustable height including an inner member and an outer member disposed in telescopic coaxial relation,

an armrest assembly fixed to the upper end of one of said telescoping members in crosswise relation to the axis of said upright assembly, with said armrest assembly including an elongated box-like member having a center portion adapted for attachment to one of said telescoping members and which in use is located beneath the arm pit of the user, and first and second extensions extending outwardly from said center portion and which in use are located beneath the front and rear portions of the arm of the user, and padding means carried on at least the upper portion of said block-like member, the upper surface of said center portion being recessed over substantially the entire extent thereof to define an area of maximum cushioning in the proximity of the middle of the arm pit and the extension absorbing the major portion of the force of the body weight applied to the implement in use; and

mounting means secured to said base and fixed to the lower end of the other one of said telescoping members, said mounting means comprised of a cylindrical-shaped resilient connecting member having upper and lower mounting members attached thereto in substantially vertical alignment with respect to the centerline of said connecting member, with said lower mounting member securing said mounting means to said base member and said upper mounting member securing said mounting means to said lower end of the other one of said telescoping members, with said resilient connecting member permitting universal movement of said upright assembly relative to said base member from its generally vertical orientation when the user moves from a generally erect position and causing said upright assembly to return automatically to its generally vertical orientation when the user returns to a generally erect position.

4,565,410

APPARATUS FOR CONTROLLING THE SUPPLY OF HIGH-PRESSURE LIQUID TO A CUTTER DRUM ASSEMBLY

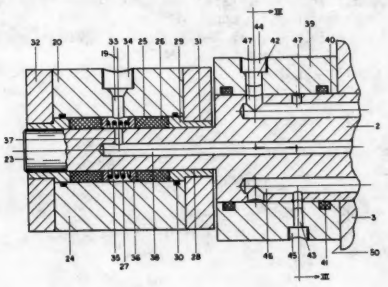
Karl Hotger, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Fed. Rep. of Germany

Filed Dec. 9, 1983, Ser. No. 559,970

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3246991

Int. Cl.⁴ E21F *5/02*; E21C *7/08*

U.S. Cl. 299—81 **4 Claims**



1. Apparatus for controlling the delivery of high-pressure liquid through a seal to a shearer drum mounted on a carrying arm of a shearer cutter for a longwall mining machine, said shearer drum having on its periphery nozzles for discharging high-pressure liquid onto a face area, said apparatus including a liquid circuit with liquid passageways extending through a shaft arranged centrally to extend through the shearer drum, said circuit further including valves in the interior of said shearer cutter for connecting the liquid passageways extending through said shaft to only those nozzles on the periphery of the drum which are opposite the working face, an arm for carrying the shearer drum through which said shaft extends together with the liquid passageways therein for delivery of high-pressure liquid through passageways therein for controlling said valves, a seal on an end portion of said shaft which projects from said carrying arm for feeding high-pressure liquid to the liquid passageways in said shaft, and means extending along a part of said shaft for controlling the actuation of said valves.

4,565,411

HYDRAULIC BRAKE SYSTEM WITH SLIP CONTROL

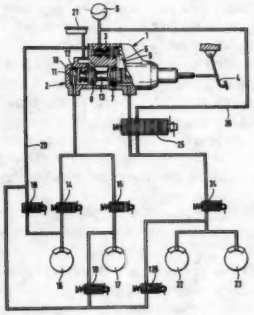
Wolfram Seiber, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 11, 1984, Ser. No. 629,696

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327401

Int. Cl.⁴ B60T *8/10*

U.S. Cl. 303—110 **5 Claims**



1. A hydraulic brake system with slip control for automotive vehicles comprising:

a plurality of wheel brakes operating on a like plurality of wheels, at least one wheel being driven;

a pedal-operable braking pressure generator having a first piston defining a first chamber and a second piston defining a second chamber;

an unpressurized reservoir;

a pressure accumulator hydraulically connected to said first chamber by a brake valve;

a first brake system valve means normally connecting at least one of said brake wheels with said second chamber;

a second brake system valve means normally connecting said driven wheel brakes with said first chamber;

a third brake system valve means normally interrupting flow between said wheel brakes and said unpressurized reservoir;

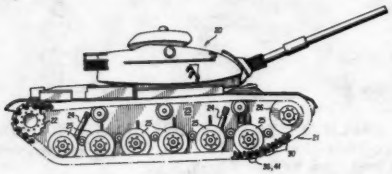
a fourth brake system valve means normally interrupting flow between said driven wheel brakes and said pressure accumulator; whereby said slip control closes at least one of said first and second brake system valve means in response to a first predetermined input control signal; and whereby said slip control closes at least one of said first and second valve means and opens said third valve means in response to a second predetermined input control signal; and whereby said slip control opens said fourth valve means in response to a third predetermined input control signal.

4,565,412

TRACK AND ROAD WHEEL ASSEMBLIES FOR TRACKED VEHICLES

Hubert Comminge, Springfield, Va.; John E. Cunningham, Orlando, Fla., and Howard R. White, Jr., Littleton, Colo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 3, 1983, Ser. No. 519,959
Int. Cl.[4] B62D *55/12, 55/20*
U.S. Cl. 305—53 **17 Claims**



1. A track and road wheel assembly to help support and propel a tracked vehicle having a hull supported on an endless track subassembly by plural road wheel subassemblies, said assembly comprising:

A. an endless track subassembly comprising

a. a plurality of pivotally interconnected track shoes, each shoe having a body of composite material and including

(i) an outer generally non-metallic rigid body material formed around a more rigid, metallic inner body support member having spaced-apart link-receiving apertures at opposed lateral sides;

(ii) a generally planar bottom side portion having a tread surface for engaging the ground to help propel the vehicle, the body and tread surface being formed of the same non-metallic rigid material;

(iii) a transversely projecting medial body portion projecting upwardly away from the shoe's bottom side portion and constituting in part support means thereof and said link-receiving apertures extending through said medial body portion, and between which apertures there is a central groove transversely through an upper portion of said medial body portion for cooperative engagement by the road wheels;

b. connecting link means including plural connecting links and bushed retainer pin means for releasable interlocking relation through said link-receiving apertures in a manner facilitating supportive pivotal interconnection of a plurality of adjacently disposed track shoes into an endless flexible track; and

B. a plurality of road wheels each adapted to be operatively mounted respectively with a hull-attached road wheel support arm, said plural road wheels collectively adapted for cooperative working relation with said endless track subassembly via said road wheels, and said road wheels each having an outer peripheral rolling surface for complementally engaging said central grooves of passing track shoes of said endless track assembly.

4,565,413

PORTABLE DESK

Gary E. Wallace, Rte. 5, #25 Lazy S La., Chico, Calif. 95926

Filed Feb. 6, 1984, Ser. No. 577,586
Int. Cl.[4] A47B *53/00*
U.S. Cl. 312—184 **7 Claims**

1. A portable easily transportable desk suitable for use on the seat of an automobile, which desk comprises:

a bottom wall,

a front wall and a back wall, normal to said bottom wall, each connected to the bottom wall, and upstanding therefrom in a spaced relationship,

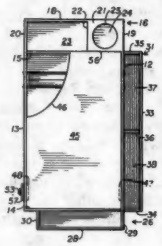
a pair of parallel side walls, interconnecting said front and rear walls, and said bottom wall, all of said walls together forming an enclosure that is open at the top;

a top surface planar member suitable as both a writing surface and as a closure for the open top,

said top surface planar member being pivotable and slideable with respect to said enclosure,

the pivoting means being at one end of the planar member and acting as a connecting means for connecting said planar member to said enclosure,

said top planar member being pivotally connected at one end of same to said enclosure, wherein said connecting means includes a pair of horizontally extending slots in said front and back walls, respectively, said slots being aligned and



lying in substantially the same horizontal plane, and roller means mounted on said top member engaging said horizontal slots, whereby said planar member may be pivoted from a flat position covering said enclosure, to a raised position with the non-connected end of said planar member away from the top opening of the enclosure, and

said top planar member may be slid on said slots horizontally away from one of said enclosure's side walls toward a user of the desk,

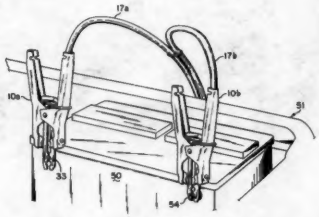
and wherein said top planar member includes a cut out portion adapted to accommodate the body of the user of said desk, when said top planar member is slid toward said user.

4,565,414

BATTERY CLAMP

Gerald H. French, St. Louis, Mo., assignor to Associated Equipment Corporation, St. Louis, Mo.

Filed Jun. 25, 1984, Ser. No. 624,216
Int. Cl.[4] H01R *27/00*
U.S. Cl. 339—32 R **19 Claims**



1. An improved battery clamp for use with top post and side terminal batteries in which a pair of opposed clamp portions are hingedly connected, and a biasing means operatively engages the opposed clamp portions and tends to bias the clamp to a closed position wherein the improvement comprises:

a side terminal connector carried by the clamp and selectively extensible beyond the clamp portions with the clamp portions selectively engaging the connector under

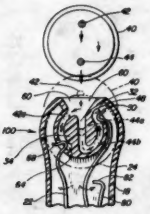
the force of the biasing means for providing a battery side terminal engagement force to the connector.

4,565,415

SOCKET FOR FLUORESCENT LAMPS

Albert E. Feinberg, Chicago, Ill., assignor to Advance Transformer Co., Chicago, Ill.

Filed Aug. 26, 1983, Ser. No. 526,913
Int. Cl.[4] H01R *33/08*
U.S. Cl. 339—50 R **13 Claims**



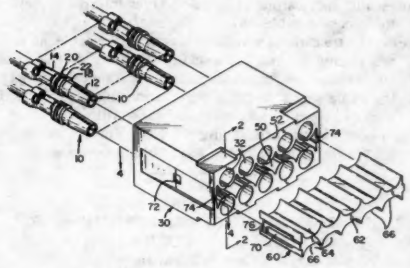
1. A socket for fluorescent lamps of the type which has a pair of parallel contact pins extending axially out of each of its ends, each pair of pins being equidistant from the lamp axis on diametrically opposite sides of said axis, said socket comprising a housing adapted to be mounted to an electrical fixture at one end of said housing and having structure for insulately mounting the pins of a lamp end adjacent the second end of said housing, the socket presenting a front surface to be disposed parallel to the lamp end, said pin-mounting structure comprising means forming a continuous S-shaped symmetrical pathway in said housing opening to said front surface and being formed of an intermediate linear channel and a pair of arcuate channels on opposite sides of said intermediate linear channel, a guide entrance formed in said housing opening to said intermediate linear channel below said front surface from the said second end of the said housing at the juncture of one of the arcuate channels with the intermediate linear channel and said intermediate linear channel adapted to receive the pair of pins of the lamp end in a translating movement of the lamp parallel to its axis, each of said arcuate channels having an entrance and a dead end, the ends of the intermediate linear channel communicating respectively only to the entrance ends of said arcuate channels respectively, said intermediate linear channel forming the sole linear path for both pins and said arcuate channels forming individual arcuate paths for each pin respectively, said arcuate channels being of substantially equal length, each arcuate channel extending over an arc with the respective dead end beyond 90° from the respective entrance, electrical contact means disposed solely immediately adjacent each dead end, equidistant and remote from each entrance of the arcuate channels, said socket having a pair of conductive members mounted to its said one end and capable of being coupled to external electrical circuitry, each conductive member extending within the housing and leading to a respective electrical contact, both pins requiring full engagement within said linear intermediate channel for simultaneous pin entry into both arcuate channels for rotation thereof respectively and translation to the dead ends of said arcuate channels, said lamp being rotatable only subsequent to full disposition of both pins within said intermediate linear channel and electrical contact being effected, subsequent to introduction of said pins into said arcuate channels, only when both pins are at or immediately adjacent the dead ends of the respective arcuate channels, remote from the entrance, and engaged with said electrical contact means whereby to prevent electric shock by inadvertent engagement of one of the pins with the electrical contact means while the lamp is held by the operator and prior to engagement of all pins with their respective electrical contacts and means for seating said pins at the dead ends of said arcuate channels.

4,565,416

LATCHING MEANS AND LOCKING MEANS FOR RETAINING TERMINALS IN A CONNECTOR

William J. Rudy, Annville, and Dennis E. Smith, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 11, 1984, Ser. No. 599,092
Int. Cl.[4] H01R *11/11*
U.S. Cl. 339—59 M **19 Claims**



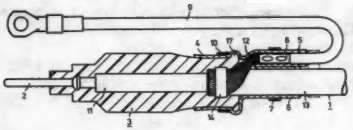
1. An electrical connector for contact terminals comprising a connector housing including one or more terminal-receiving cavities extending axially therethrough in axial communication with front and rear surfaces thereof, each said cavity having at least a forward section in which a contact portion of a said terminal is secured after insertion of said terminal therein, said forward section of each said cavity having a rigid semicircular wall portion and a resilient, expandable semicircular wall portion joined to said rigid wall portion longitudinally therealong, there being terminal-engaging latching means on each of said rigid and said expandable wall portions such that when a respective said terminal having cooperating latching means thereon is inserted and before said terminal-engaging latching means and said cooperating latching means engage in a latching condition, said expandable semicircular wall portion of said cavity is expanded radially outwardly by said terminal, and upon said terminal being latched in said cavity said expandable wall portion returns to its normal unexpanded condition.

4,565,417

SINGLE POLE PLUG CONNECTOR ARRANGED AT THE END OF A SINGLE CONDUCTOR SHIELDED ELECTRIC CABLE

Klaus Diissel, Mitwitz; Werner Orlowski, Erlangen; Gerhard Ott, and Hans Toczelowski, both of Neustadt, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1985, Ser. No. 708,449
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1984, 3408525
Int. Cl.[4] H01R *4/00*
U.S. Cl. 339—94 C **12 Claims**



1. In a single pole plug connector which is arranged at the end of a single conductor, shielded, plastic jacketed electric cable and in which a plug connector part is connected to a recessed end of the cable, the cable being surrounded by an insulator of elastomeric material which can be slipped over the

cable end and sealed to the cable end, the cable shield comprising individual wires which are brought out of a back opening of the insulator and connected to a connecting lead via a compression joint, the improvement comprising:

(a) the shield wires being folded within the insulator back onto the jacket of the recessed cable end;

(b) a sealing sleeve surrounding the folded back shield wires;

(c) the insulator resting elastically with its entire inside surface on the recessed cable end;

(d) a thin lubricating and sealing layer interposed between the recessed cable end and the insulator;

(e) at the transition from the insulator to the cable, an elastic cap resting against the insulator, forming an elastic seal, and having two finger-like extensions, one extending over the cable jacket and the other enclosing the connecting lead and forming an elastic seal therewith; and

(f) a hose clamp surrounding the cable and the connecting lead in the vicinity of the finger-like extensions.

4,565,418

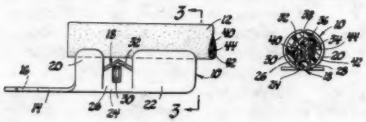
INSULATION DISPLACEMENT TERMINAL FOR NONMETALLIC CORE CABLE

Joseph H. Graeser, Jr., Cortland, and Rudolph A. Schlais, Jr., Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 7, 1985, Ser. No. 689,441

Int. Cl.[4] H01R *4/24*

U.S. Cl. 339—97 C **2 Claims**



1. An insulation displacement terminal for piercing the insulation of an insulated electrical cable and making contact with a nonmetallic conductive core of the cable comprising,

an insulation displacement portion having first and second crimp barrels spaced apart longitudinally and connected by an intermediate bridge,

first and second plates connected at opposite longitudinal sides of the bridge by respective bights so that the first and second plates are spaced apart and confront each other, and

a transversely elongated dimple in each plate which extends toward the dimple of the other plate to cooperatively form a core receiving slot, and

each of said plates having a sharp edge at the side opposite the bridge for penetrating and slicing through the insulation of an insulated cable forced down between the plates so that the nonmetallic conductive core enters the slot cooperatively formed by the elongated dimples.

4,565,419

THREADED LAMP ADAPTER SYSTEM WITH SPRING ADAPTER

George E. Johnson, Bronxville, and Walter Newman, Forest Hills, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Continuation-in-part of Ser. No. 420,202, Sep. 20, 1982, Pat. No. 4,429,942, which is a continuation of Ser. No. 211,620, Dec. 1, 1980, Pat. No. 4,360,243. This application Apr. 8, 1983, Ser. No. 483,347

Int. Cl.[4] H01R *13/02*

U.S. Cl. 339—154 L **7 Claims**

1. A connector for adapting a lamp to be threaded into a lighting fixture comprising:

a body adapted to receive first electrical conductor means connectable to an energizing terminal of said lamp,

a sleeve having threads at least on its exterior surface for connection to a threaded light socket and rotatably mounted on said body, said connector including retaining means for limiting axial movement between said body and said sleeve,

first resistance means on said body member, and second resistance means on said sleeve member, said first and second resistance means operating to increase the torque necessary to rotate said sleeve in a predetermined disposition relative to said body, said first electrical conducting means being connected to said retaining means, said retaining means being conductive and urged against said sleeve for maintaining electrical contact with said sleeve

said sleeve is rotated relative to said body, said first resistance means being formed on said retaining means, said second resistance means including at least one slot formed by said retaining means and at least one cavity formed by said body, said slot and said cavity being capable of coming into registry when said sleeve is rotated relative to said body, said retaining means including a resilient material and said first resistance means includes a resilient finger in registry with said cavity and capable of springing into engagement with said slot and said cavity when said retaining means is rotated relative to said sleeve and said slot and said cavity come into registry.

4,565,420

SOCKET AND BASE FOR PICTURE TUBES

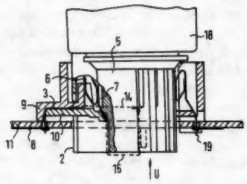
Otto Brunn, Wernau, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 19, 1983, Ser. No. 543,180

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239691

Int. Cl.[4] H01R *13/53*

U.S. Cl. 339—193 P **7 Claims**



1. A high voltage socket and base assembly for a picture tube having longitudinally downwardly extending pins comprising:

a hollow base having an outer wall, said outer wall defining

a plurality of longitudinally extending channels for reception of said pins, one of said channels forming a silo, and a throughgoing open slot formed in a portion of said silo, said slot leading to said silo;

said socket having a single high-voltage lead for engagement with one of the pins of the picture tube, said high-voltage lead having a portion radially extending through said slot and into said silo, the radially extending portion of said high-voltage lead being enclosed by insulative portions of said socket;

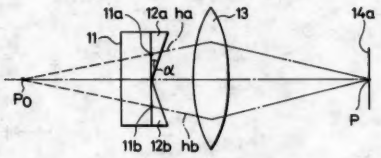
said slot being sized to provide insertion of the radially extending lead enclosed by said insulative portion of said socket, and

said socket having a line conductor electrically connected to said high-voltage lead.

4,565,421
PLURAL-BEAM SCANNING APPARATUS

Kazuo Minoura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1983, Ser. No. 500,072
Claims priority, application Japan, Jun. 4, 1982, 57-95895
Int. Cl.⁴ G02B *27/17*
U.S. Cl. 350—6.8 **10 Claims**



1. A plural-beam scanning apparatus comprising:

a light source unit having a plurality of light-emitting portions each for emitting a light beam;

deflecting means having a reflecting surface for deflecting the light beams emitted from said light-emitting portions in at least one deflection-scan plane;

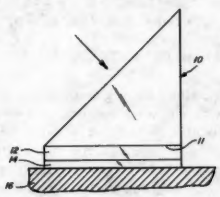
prism means for refracting the light beams emitted from said light-emitting portions so that the central light rays of all of the light beams emitted from the light-emitting portions of said light source unit are caused to pass through substantially the same point when viewed in a direction perpendicular to the deflection-scan plane; and

imaging means for rendering said same point and a point near said reflecting surface of said deflecting means optically conjugate.

4,565,422
SURFACE PLASMON COUPLER

Robert J. Seymour, Wellesley Hills, Mass., and George I. Stegeman, Tucson, Ariz., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 30, 1983, Ser. No. 556,862
Int. Cl.⁴ G02B *5/04*
U.S. Cl. 350—96.19 **13 Claims**

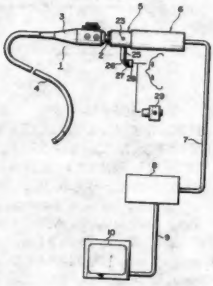


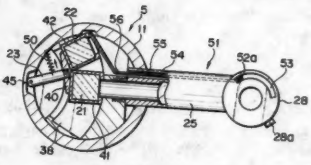
1. A device for the efficient coupling of electromagnetic radiation into surface plasmon waves, particularly in the far-infrared or submillimeter spectral regions, said device comprising; a prism having multiple faces and constructed of a dielectric material which is substantially transparent in the selected spectral region, a first layer integrally formed on one face of the prism also of a material substantially transparent in the selected spectral region and having an index of refraction which is less than the index of refraction of the prism, and a second overcoat layer integrally formed on said first layer also of a material substantially transparent in the selected spectral region and having an index of refraction which is greater than the index of refraction of the first layer.

4,565,423
CONNECTING DEVICE FOR AN ENDOSCOPE

Yasuhiro Ueda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 463,673, Feb. 4, 1983, abandoned. This application Apr. 19, 1985, Ser. No. 724,939
Claims priority, application Japan, Feb. 8, 1982, 57-18595; Feb. 8, 1982, 57-18597
Int. Cl.⁴ G02B *27/14*
U.S. Cl. 350—171 **8 Claims**





1. A connecting apparatus for optically connecting an endoscope and a television camera and selectively optically connecting the endoscope to a still camera simultaneously with the optical connection between the endoscope and the television camera, comprising:

a connecting device which connects the endoscope and the television camera in a state aligned to a first optical axis and is capable of connecting the still camera to it, including: an eyepiece section having a second optical axis crossing said first optical axis to define an optical path intersection point; supporting means movable located adjacent to said optical path intersection point; first and second light splitting members mounted on said supporting means, and first light splitting member having a light splitting ratio different from the light splitting ratio of said second light splitting member so that the first light splitting member guides more light to the television camera than does the second light splitting member; and driving means for moving said supporting means to selectively bring each of

said first and second light splitting members to a position corresponding to the optical path intersection point and automatically moving said second light splitting member to said optical path intersection point when the still camera is mounted on said eyepiece section, said driving means including biasing means connected to said supporting means for urging said supporting means into a position with said first light splitting member located at said optical axis intersection point and moving means connected to said supporting means for overcoming the urging of said biasing means and moving said supporting means into a position with said second light splitting member located at said optical path intersection point, and moving means actuating means mounted on said eyepiece section for actuating said moving means when a still camera is mounted on said eyepiece and for deactuating said moving means when the still camera is removed from said eyepiece section so that said biasing means moves said first light splitting member back to said optical path intersection point;

an engaging member provided on the eyepiece of the endscope to be engaged with the mount portion of the still camera, said moving means actuating means being connected to said engaging member; and means on the still camera for engaging said engaging member.

4,565,424

ASYMMETRIC DICHROIC DYE MOLECULES HAVING POLY(ARYLAZO) LINKING GROUPS, A BIS-SUBSTITUTED ARYL THIAZYL END GROUP, AND ANOTHER END GROUP

William A. Huffman, Minneapolis, and James C. Novack, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 216,010, Dec. 12, 1980, abandoned. This application Jan. 6, 1982, Ser. No. 337,493

Int. Cl.⁴ C09B *31/053, 31/18, 31/28, 31/30*

U.S. Cl. 350—349 **19 Claims**

1. A dichroic dyestuff having the formula

Q—A—Z

wherein:

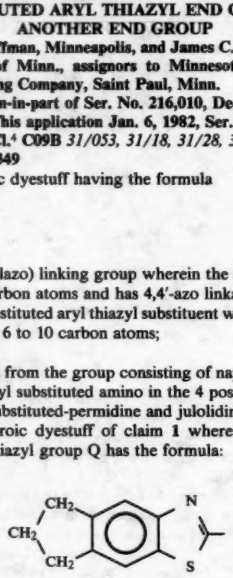
is a poly(arylazo) linking group wherein the aryl comprises 6 to 10 carbon atoms and has 4,4'-azo linkages;

Q is a bis-substituted aryl thiazyl substituent wherein the aryl comprises 6 to 10 carbon atoms;

and

Z is selected from the group consisting of naphthalene having an alkyl substituted amino in the 4 position, 2,3-dihydro-2,2'-substituted-permidine and julolidine groups.

4. The dichroic dyestuff of claim 1 wherein the bis-substituted aryl thiazyl group Q has the formula:



15. An improved "guest-host" type liquid crystal display device which is responsive to the absence or presence of an electric field, said device comprising a layer of a nematic liquid crystal composition and two conductive electrodes positioned, respectively, adjacent opposing surfaces of said layer, wherein the improvement comprises the presence of a dichroic dyestuff according to claim 1 in admixture with said liquid crystal composition.

4,565,425

LIQUID CRYSTALS

Martin Petrzilka, Kaiseraugst, and Martin Schadt, Seltisberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 5, 1984, Ser. No. 586,487

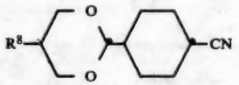
Claims priority, application Switzerland, Mar. 16, 1983, 1436/83; Jan. 19, 1984, 226/84

Int. Cl.⁴ G02K *1/13;* **C09K** *3/34;* **C07D** *319/06*

U.S. Cl. 350—350 R **5 Claims**

1. A compound of the formula:

LXXVIII



wherein R^8 is straight-chain C_1–C_{12} alkyl.

4,565,426

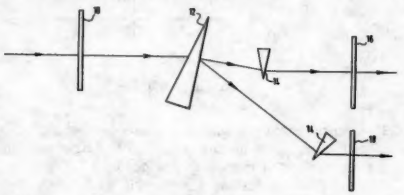
BEAM SPLITTER

Ralph A. W. Cullen, 84, Wimbourne Rd. West, Dorset, England (BH 212 DP)

Filed May 2, 1983, Ser. No. 490,718

Int. Cl.⁴ G02B *27/10*

U.S. Cl. 350—401 **5 Claims**



1. A beam splitter for use in high power multi-wavelength laser holography, comprising a bi-refringent prism through which the beam to be split is arranged to pass and operative to split the beam into two separate beams having mutually orthogonal polarization planes, said bi-refringent prism causing a predetermined degree of dispersion of said two separate beams, a half-wave plate arranged in the path of at least one of the separated beams to be realigned, and first and second additional prisms arranged in the paths of each of said two separate beams to compensate for said dispersion of the wavelength of the incident beam by said bi-refringent prism.

4,565,427

DEVICE FOR THE RAPID ADJUSTMENT OF MICROSCOPE STAGES

Albert Schilling, Aalen, and Wolfgang Schob, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 546,201

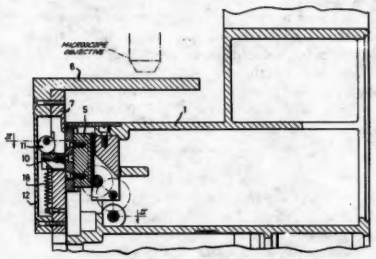
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242523

Int. Cl.⁴ G02B *21/26*

U.S. Cl. 350—530 **10 Claims**

1. In a microscope stand having a vertical guide and a stage guided thereby, with stage-positioning rack-and-pinion coupling of the stage to a focusing drive in the stand, for selective elevational positioning of the stage, the improvement in which (a) an eccentric is journaled for selective rotation in the stage, (b) the rack of said coupling has vertically guided displaceability with respect to the stage, and (c) the eccentric and the rack coact to establish instantaneous relative elevation of the stage with respect to the rack.

4. In combination, a microscope stand, a stage in vertically guided relation to said stand, first stage-elevation adjustment mechanism comprising a rack in vertically guided relation with said stage and a pinion meshing with said rack and journaled



for rotation in said stand, and second stage-elevation adjustment mechanism comprising an eccentric journaled for rotation in said stage and in vertically reacting engagement with a part of said rack.

4,565,428

EYE SHIELD FOR A VIEWING DEVICE

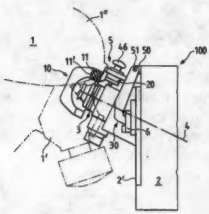
Klaus Arndt, Zürich, and Saverio Sanvido, Glattbrugg, both of Switzerland, assignors to Contraves AG, Zürich, Switzerland

Filed Jan. 13, 1984, Ser. No. 570,508

Claims priority, application Switzerland, Jan. 20, 1983, 310/83

Int. Cl.⁴ G02B *23/16*

U.S. Cl. 350—579 **5 Claims**



1. An eye shield for a viewing device having at least one ocular, comprising:

a flexural elastic headrest containing a forehead rest and two lateral portions;

a first mounting frame for attachment of said flexural elastic headrest to a housing of said viewing device;

two hinge bodies mounted in mutually spaced relationship on an external side of said headrest;

said first mounting frame being provided with hinge journals cooperating with said two hinge bodies;

said headrest being hingedly mounted by means of said two hinge bodies at said hinge journals of said first mounting frame such that in addition to the inherent flexural elasticity of said headrest there is obtained a hinge-like deformation of said headrest;

a second mounting frame cooperating with said first mounting frame;

a mounting bracket for securing said headrest, said first mounting frame and said second mounting frame as a unit to the housing of the viewing device; and

an actuator member arranged at said second mounting frame and displaceable into operable association with a switch of said viewing device by contact pressure exerted against said headrest by a user.

4,565,429

NON-METALLIC EYEGLASS FRAME WITH ADJUSTABLE NOSE PAD ARMS

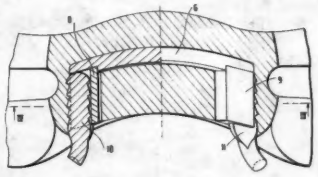
Anton Dietrich, Munich, Fed. Rep. of Germany, assignor to Optische Werke Rodenstock, Fed. Rep. of Germany

Filed Dec. 3, 1982, Ser. No. 446,504

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149178

Int. Cl.⁴ G02C *5/12*

U.S. Cl. 351—137 **13 Claims**



1. A non-metallic eyeglass frame having a nose bridge area and nose pads arranged on adjustable nose pad arms, a center piece substantially completely embedded within the nose bridge area of the frame in such a manner that the center piece is substantially devoid of any part projecting beyond the surface of the frame, and means for enabling secure anchoring of the nose pad arms in said center piece subsequent to the embedding of the center piece in the frame to allow adjustment of the nose pad arms without disengagement of the nose pad arms from the frame.

4,565,430

OVERHEAD PROJECTOR

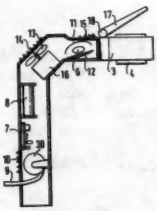
Peter H. Grunwald, Rheinstrabe 37-39, 6070 Langen, Fed. Rep. of Germany

Filed Sep. 2, 1983, Ser. No. 529,036

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232639; Oct. 28, 1982, 3239890; Nov. 12, 1982, 3241956; Apr. 15, 1983, 3313697; Apr. 15, 1983, 3313699; May 3, 1983, 3316032

Int. Cl.⁴ G03B *21/16*

U.S. Cl. 353—61 **28 Claims**



1. An overhead projector comprising a base, a hollow post extending up from said base and comprising a lower approximately vertical portion and an upper approximate horizontal portion, a projector head on said upper portion of said post and comprising an objective lens and a deflection mirror, a light source in said upper portion of said post adjacent said projector head, a power supply unit in a lower portion of said hollow post and supplying power for said light source, a motor driven ventilator in an intermediate portion of said hollow post between said power supply unit and said light source, said power supply unit supplying power also to said ventilator, an air outlet opening in said post adjacent said ventilator for discharge of air from said ventilator, a first air inlet in said lower portion of said post below said power supply unit for admitting air to cool said power supply unit and a second air inlet in said

upper portion of said post adjacent said light source for admitting air to cool said light source, air from said first and second inlets being drawn over said power supply unit and said light source respectively by said ventilator and discharged through said outlet opening.

4,565,431

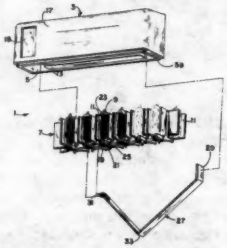
PHOTOGRAPHIC CAMERA AND FLASH ASSEMBLY

Charles J. Henley, Macedon, and Frederick W. Harvey, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 24, 1984, Ser. No. 686,106

Int. Cl.[4] G03B *15/04*

U.S. Cl. 354—135 **18 Claims**



1. In a photoflash assembly of the type wherein (a) a plurality of flashlamps are movable sequentially to a firing position and (b) said assembly is adapted for attachment to a camera having a firing circuit for igniting a flashlamp in the firing position, the improvement comprising:

a flashlamp advancing member made of an electrically conductive material and disposed to form an integral part of the firing circuit in a camera when said photoflash assembly is attached to the camera;

means supporting said advancing member for movement to establish an electrical connection with the respective flashlamps, one at a time, and to advance a flashlamp electrically connected with the advancing member to the firing position.

4,565,432

MOTOR DRIVEN CAMERA

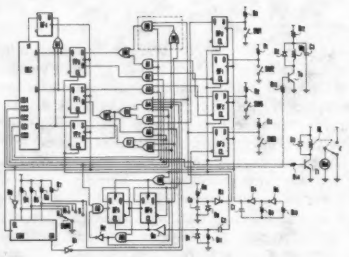
Hidehiko Fukahori, Kanagawa; Masahisa Fujino, and Toshihiko Satoh, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1984, Ser. No. 636,400

Claims priority, application Japan, Aug. 5, 1983, 58-143515

Int. Cl.[4] G03B *1/18*

U.S. Cl. 354—173.11 **20 Claims**



1. A motor driven camera comprising:

(a) film feeding means operable at a plurality of selected frame speed modes in response to driving power from an electric motor for advancing a film;

(b) frame speed mode selecting means for selecting the frame speed modes of said film feeding means;

(c) blank frame advancing switch means for producing a blank feeding start signal; and

(d) blank frame advancing control means responsive to the blank feeding start signal for cancelling the frame speed mode selected by said frame speed mode selecting means and forcibly selecting the fastest speed mode from among the plurality of frame speed modes for operating said film feeding means to advance the film a number of blank frames.

4,565,433

VIEWFINDER FOR CAMERA

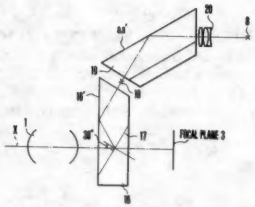
Masatake Kato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Sep. 24, 1984, Ser. No. 654,101

Claims priority, application Japan, Sep. 29, 1983, 58-150804[U]

Int. Cl.[4] G03B *3/00, 19/12*

U.S. Cl. 354—201 **7 Claims**



1. A viewfinder for a camera comprising:

(a) a photographic lens having an optical path;

(b) optical path splitting means for splitting said optical path on the image side of said photographic lens;

(c) light conducting means for conducting light by an even number of times reflections including the reflection by said optical path splitting means;

(d) light reflecting means receptive of the light emerged from said light conducting means and having roof type reflective surfaces, said light reflecting means having no crossing optical path; and

(e) an eyepiece receptive of the light emerged from said light reflecting means, the light emerged from said photographic lens forming an image between said optical path splitting means and said light reflecting means.

4,565,434

SIGNAL TRANSFERRING DEVICE FOR PHOTOGRAPHIC INSTRUMENT OR ACCESSORY

Hidehumi Notagashira, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1983, Ser. No. 458,972

Claims priority, application Japan, Feb. 15, 1982, 57-22412; Mar. 10, 1982, 57-37639

Int. Cl.[4] G03B *17/00*

U.S. Cl. 354—286 **2 Claims**

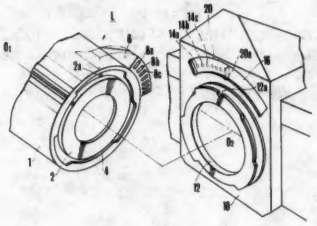
1. A signal transmitting device for transmitting electrical signals between a camera having an actuating member and an interchangeable lens assembly having an optical axis, comprising:

an interchangeable lens barrel having a base plate with holes, coupling means for mounting said interchangeable lens barrel on a camera, said coupling means being coupled with complementary coupling means on the camera;

a plurality of electrical signal terminals arranged on the

outside of said coupling means on a circle concentric with the optical axis, said electrical signal terminals being inserted into the holes formed in the base plate, first spring members for biasing said terminals so that ends of said terminals project out of said holes toward the camera; and

a protecting member on the lens barrel for protecting said electrical signal terminals, said protecting member being movable concentrically about the optical axis so as to cover ends of said electrical signal terminals, a second spring member for moving said protecting member, when said interchangeable lens barrel is dismounted from the camera, along said electrical signal terminals so as to



cover said electrical signal terminals, said protecting member being opened by the actuating member against the force of said second spring member when said interchangeable lens barrel is mounted on the camera, so that said electrical signal terminals transmit the electrical signals between the camera and the interchangeable lens assembly at a position when the coupling of said coupling means and said complementary coupling means is completed;

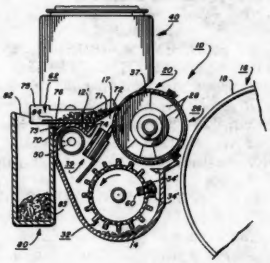
said electrical signal terminals applying pressure contact on a reverse side of said protecting member in response to said first spring members, and move slidingly over the reverse side when said protecting member is opened.

4,565,435

APPARATUS AND METHOD FOR REMOVING DEVELOPER FROM THE SUMP OF AN ELECTROSTATIC COPYING OR PRINTING MACHINE

Lawrence M. Hart, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1984, Ser. No. 624,441
Int. Cl.[4] G03G *15/06*
U.S. Cl. 355—3 DD **6 Claims**



1. In an electrostatic type reproduction or printing apparatus having a photoconductive member on which latent electrostatic images are produced, and developing means for developing said images, said developing means including a developer housing having a lower sump for holding developer for developing said images, at least one magnetic brush developing roll for bringing developer into developing relation with said photoconductive member to develop said images, and a developer transfer wheel having a succession of paddles around the circumference thereof for carrying developer from said sump to said developing roll, the improvement comprising:

(a) magnet means on at least one of said paddles for attracting developer from said sump to said one paddle when the level of developer in said sump falls below the operating level of said paddles whereby to enable said developer transfer wheel to be used in clearing said sump of developer; and

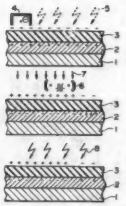
(b) developer pick off means disposable adjacent said developing roll to intercept and remove developer on said developing roll, said developer pick off means forming a path for conducting developer removed from said developing roll to a point external of said developer housing.

4,565,436

ELECTROPHOTOGRAPHIC COPYING PROCESS

Takao Okada; Akitoshi Toda, and Yoshiyuki Mimura, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1983, Ser. No. 549,314
Claims priority, application Japan, Nov. 27, 1982, 57-208311
Int. Cl.[4] G03G *15/22*
U.S. Cl. 355—3 R **11 Claims**



1. An electrophotographic process which employs an electrophotographic photosensitive member of a basic construction in which a photoconductive layer and a transparent insulator layer are sequentially laminated on the surface of a conductive supporter, comprising the steps of:

providing a primary charge uniformly from the surface side of said transparent insulator layer of said photosensitive member;

performing a secondary corona charging during an imagewise exposure by applying a square wave voltage whose voltage-time integration value of a polarity reverse to said primary charge is greater than that of the same polarity as said primary charge; and

forming an electrostatic latent image on said transparent insulator layer by applying a uniform exposure.

4,565,437

HYBRID DEVELOPMENT SYSTEM

Anthony R. Lubinsky, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1983, Ser. No. 549,934
Int. Cl.[4] G03G *15/09*
U.S. Cl. 355—3 DD **5 Claims**

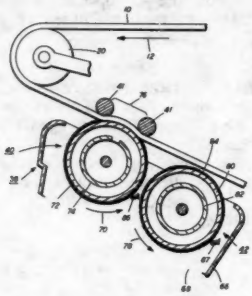
1. An electrophotographic printing machine of the type having an electrostatic latent image recorded on a flexible photoconductive member, wherein the improvement includes:

a first tubular member, positioned closely adjacent to the photoconductive member defining a first development zone therebetween, said first tubular member rotating at a first angular velocity for transporting a developer material comprising at least conductive carrier granules and magnetic toner particles into contact with the photoconduc-

tive member in the first development zone so as to optimize development of solid areas in the latent image;

a first magnetic member disposed interiorly of and spaced from siad first tubular member to attract the developer material thereto;

a second tubular member, spaced from said first tubular member and positioned closely adjacent to the photoconductive member defining a second development zone therebetween, said second tubular member rotating at a second angular velocity with the first angular velocity being greater than the second angular velocity for transporting the developer material into contact with the photoconductive member in the second development zone to



optimize development of lines in the latent image and to remove carrier granules adhering to the photoconductive member;

a second magnetic member disposed interiorly of and spaced from said first tubular member to attract the developer material thereto; and

means for maintaining the photoconductive member, in the region of at least the first development zone, at a preselected tension of sufficient magnitude so that the developer material being transported into contact with the photoconductive member in at least the first development zone, deflects the photoconductive member about said first tubular member to form a wrapped first development zone.

4,565,438

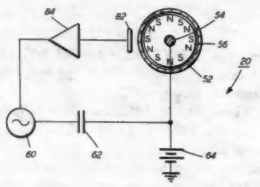
DEVELOPMENT SYSTEM USING ELECTRICALLY FIELD DEPENDENT DEVELOPER MATERIAL

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 1, 1984, Ser. No. 575,967

Int. Cl.[4] G03G *15/09*

U.S. Cl. 355—3 DD **14 Claims**



1. An apparatus for developing an image region recorded on a photoconductive surface with a developer material comprising at least carrier granules and toner particles and the developer material having the resistivity thereof varying continuously as a function of the electrical field applied thereto, including:

first means for transporting the developer material closely adjacent to the photoconductive surface so that the toner particles are attracted from the carrier granules to the image region forming a toner powder image thereon;

means for generating an alternating electrical field between said first transporting means and the photoconductive surface with the alternating field having an amplitude sufficient to change the resistivity of the developer material to a more conductive state; and

means for sensing the conductivity of the developer material and controlling the alternating electrical field generated by said generating means.

4,565,439

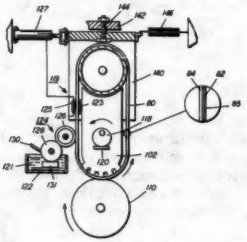
LOW MASS HEAT AND PRESSURE FUSER

Scott D. Reynolds, Endwell, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1984, Ser. No. 666,714

Int. Cl.[4] G03G *15/20*

U.S. Cl. 355—3 FU **16 Claims**



1. Heat and pressure fuser apparatus for fixing toner images on substrates, said apparatus comprising:

belt structure adapted to contact toner images;

means including a non-rotating mandrel for supporting said belt structure;

means for effecting movement of said belt structure about said mandrel;

means cooperating with said non-rotating mandrel to exert pressure on said belt and toner images contacted by the belt structure; and

means for effecting movement of said non-rotating mandrel thereby causing it to be skewed relative to the axis of said cooperating means whereby proper tracking of said belt as it moves about said belt supporting structure is accomplished.

4,565,440

DEVICE FOR EXPOSING AND DEVELOPING A LIGHT-SENSITIVE MATERIAL

Hanns Bloechl, Unterhaching, and Guenther Schnall, Eching, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 603,211

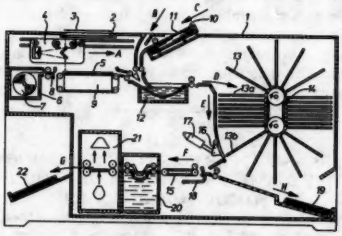
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315711

Int. Cl.[4] G03B *27/52*; G03D *9/00*

U.S. Cl. 355—27 **5 Claims**

1. A device for exposing and developing light-sensitive material, comprising a housing; a film-exposing means and developing means for processing two-sheet material in accordance with a diffusion process to obtain a plurality of two-sheet copies, said film-exposing means and said developing means being positioned in said housing; a diffusion space formed in said housing for a full development of copies and having an entrance and an exit; copy-receiving means including at least one flat copy-receiving wall having a format corresponding to that of a copy being processed and receiving each

copy from said developing means so that two sheets in each copy lie on said wall in contact with each other; and means for



shifting said wall in a step-like manner from a filling position at the entrance of said diffusion space to a discharge position at the exit of said diffusion space.

4,565,441

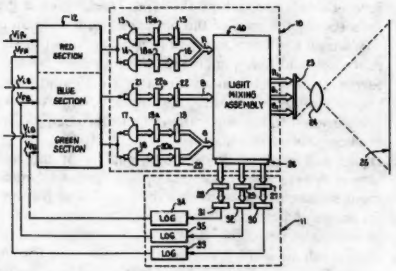
LIGHT SOURCE FOR PHOTOGRAPHIC COLOR PRINTERS

William C. Evans, Rochester, N.Y., and Haven D. Noble, Mt. Pleasant, Iowa, assignors to Viva-Tech, Inc., Rochester, N.Y.

Filed Jan. 25, 1985, Ser. No. 695,105

Int. Cl.⁴ G03B 27/72

U.S. Cl. 355—37 **13 Claims**



1. A light source for photographic printers comprising means for producing light of three primary colors, a mixing chamber having input and output ends into which said light is projected and from which mixed light is emitted for photographic illumination purposes, means for sensing the emitted light from said chamber, and electronic control means for detecting said light from said sensing means and processing said light together with control signals for said printer to control the intensity of each primary color produced by said producing means, said electronic control means comprising separate channels for each of said colors, each channel having phototransducer means for providing output signals related to the log of the intensity of a different primary color of light from said sensing means, and electronic control means having means for combining said printer control signals and phototransducer output signals and comparing said signals with a repetitive signal having a pre-determined nonlinear amplitude time characteristic for controlling the electrical power to said lamps and the current produced thereby.

4,565,442

METHOD OF AND APPARATUS FOR COPYING PHOTOGRAPHIC ORIGINALS

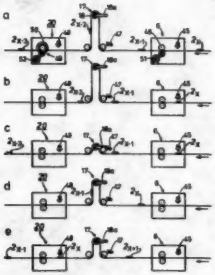
Gerhard Benker, Pullach, and Helmut Treiber, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,366

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339990

Int. Cl.⁴ G03B 27/74

U.S. Cl. 355—68 **30 Claims**



1. A method of copying originals, particularly photographic originals, comprising the steps of:

(a) conveying a band having a succession of originals along a predetermined path, said band including a plurality of coherent strips each of which has a leading and a trailing end and contains at least one of said originals, and the trailing ends of said strips being connected to the leading ends of adjoining strips at respective junctions between said strips;

(b) measuring the densities of said originals in a first zone of said path;

(c) copying said originals in a second zone of said path downstream of said first zone, the copying step including controlling the exposures of said originals as a function of the density values obtained during the measuring step;

(d) accumulating said originals in a third zone of said path intermediate said first and second zones; and

(e) synchronizing the measuring and copying steps so that the density values obtained from a selected strip are employed for exposure control of the originals constituting part of said selected strip, the synchronizing step including

(i) arresting one of said junctions at a first location of said path upstream of said third zone so that the portion of said band upstream of said first location is prevented from advancing, said one junction being situated at one of the ends of said selected strip,

(ii) withdrawing originals from said third zone while arresting said one junction, said withdrawing being performed until the portion of said band between said first location and a second location downstream of said third zone has a preselected length,

(iii) releasing said one junction when the portion of said band between said first and second locations reaches said preselected length,

(iv) measuring the length of the portion of said band which advances by said second location, said length measurement being initiated upon release of said one junction and continuing at least until the measured length substantially equals said preselected length,

(v) sensing said band at said second location, and

(vi) assigning the density values obtained from said selected strip for exposure control of the originals thereof upon detecting said one junction at said second location

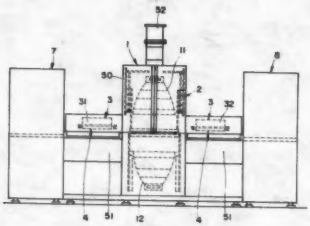
at such time as said measured length substantially equals said preselected length.

4,565,443

PRINTING APPARATUS

Yoshio Yazaki, Chofu, Japan, assignor to Orc Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1984, Ser. No. 656,924
Claims priority, application Japan, Feb. 13, 1984, 59-24616
Int. Cl.[4] G03B *27/04*
U.S. Cl. 355—99 **3 Claims**



1. A printing apparatus employing a pallet that stores a desired number of works located in stacked relation and at least one mask associated with the works, the mask being located above the works, said printing apparatus comprising:

an exposure device having a lamp serving as a light source, a reflecting mirror, a printing frame, and a transparent plate;

an admitting device acting to hold the pallet in an access position and to hold the uppermost one of the mask and works stored in the pallet at a certain height;

a conveying device including a rail extending from the access position to a takeout position past an exposure position, an introducing back plate case reciprocating between the access position and the exposure position along the rail, and a takeout back plate case reciprocating between the exposure position and the takeout position along the rail; and

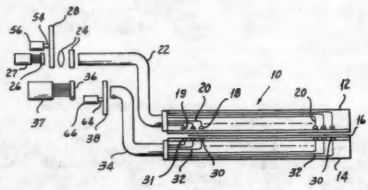
an attraction device including attraction plates each having a number of attraction pads mounted to the underside thereof for attracting and holding the works and mask, the attraction plates being mounted to their respective front surfaces of the back plate cases of the conveying device in such a way as to be vertically movable while keeping their horizontal posture.

4,565,444

ELECTRONICALLY SCANNED SPECTROMETER COLOR, BRIGHTNESS AND OPACITY MEASUREMENT AND CONTROL SYSTEM

John W. Mactaggart, Bolton, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada

Filed Nov. 1, 1982, Ser. No. 438,004
Int. Cl.[4] G01J *3/51*
U.S. Cl. 356—73 **20 Claims**



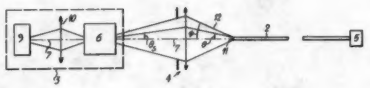
1. Apparatus for obtaining a profile measurement of the color spectrum of a moving web including in combination means for illuminating a plurality of regions of said web, a corresponding plurality of photodetectors having respective light-collecting surfaces, a circular variable bandpass filter, means for directing light emanating from said regions along respective paths onto said light-collecting surfaces, said paths intersecting said filter along a radius thereof, and means for rotating said filter to vary the wavelength transmitted to said photodetectors.

4,565,445

PROCESS AND APPARATUS FOR MEASURING THE EFFECTIVE DIAMETER OF THE GUIDED MODE IN A MONOMODE OPTICAL FIBRE

Francis Alard, "Christ" en Ploumilliau, La Rose des Vents, 22300 Lannion, and Luc B. Jeunhomme, 9 Square Monge, 78330 Fontenay le Fleury, both of France

Filed Oct. 12, 1982, Ser. No. 433,694
Claims priority, application France, Oct. 12, 1981, 81 19162
Int. Cl.[4] G01N *21/84*
U.S. Cl. 356—73.1 **7 Claims**



1. A process for measuring the effective diameter $2w_o$ of the guided mode in a monomode optical fibre, at a wavelength λ, said optical fibre admitting an input face, wherein said process comprises the steps of;

directing onto said input face a beam of incoherent light of wavelength λ, incident on said input face in accordance with a cone of apex semiangle ϕ, through optical means making it possible to vary the apex semiangle ϕ, said beam having a cross-section on the input face, which is greater than that of the core of the optical fibre, having an intensity which has a symmetry of revolution about the axis of said cone and being such that the lighting power transferred by this beam in an infinitely small solid angle $d\Omega$ about a direction forming an angle θ with said axis is proportional to $\cos \theta d\Omega$, the optical fibre being disposed in accordance with said axis;

carrying out a plurality of measurements of the lighting power $P(\phi)$ transmitted by the optical fibre, each measurement being carried out with a different value for the apex semiangle ϕ determined by the optical means; and

determining the effective diameter $2w_o$ with the aid of said measurements and by the use of the following formula, in which P_∞ is a quantity independent of the apex semiangle ϕ:

$$P(\phi)=P_\infty[1-\exp(-2(\pi^2 w_o^2/\lambda^2)\sin^2\phi)].$$

4,565,446

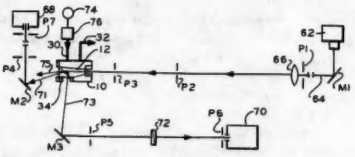
SCATTERING CELLS

Benjamin Chu, Setauket, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,115
Int. Cl.[4] G01N *1/10*
U.S. Cl. 356—246 **18 Claims**

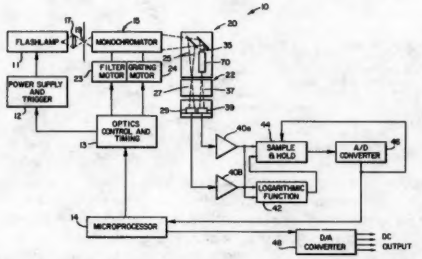
13. A method for measuring the scattering properties of a sample with a sample cell having a prismatic output window for refracting radiation and varying the angle between incident and transmitted radiation of the window as a function of the angle of incidence, said prismatic window being operable to refract incident radiation more strongly from a path near a predetermined plane to a given side thereof, comprising the steps of:

disposing said sample in said cell against said window;
directing radiation through said sample toward said output window;



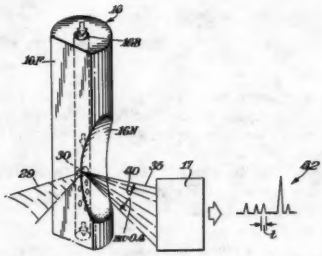
detecting radiation scattered through said sample and refracted by said prismatic output window in a predetermined solid angle of transmitted radiation refracted to said given side of said predetermined plane; and
urging said sample to flow past said window.

4,565,447
PHOTOMETRIC APPARATUS WITH MULTI-WAVELENGTH EXCITATION
Kenneth E. Nelson, N. Attleboro, Mass., assignor to Millipore Corporation, Bedford, Mass.
Filed Nov. 21, 1983, Ser. No. 553,736
Int. Cl.[4] G01J *3/42*
U.S. Cl. 356—319 **15 Claims**



1. Apparatus for providing a source of optical energy to a fluid medium and for measuring the optical properties of a sample within said fluid medium comprising:
a source of radiation capable of producing a continuum of wavelengths over a predetermined range;
monochromator means having an input for receiving optical energy from said source and an output for producing a corresponding output wavelength interval within the spectral emission of said source;
motor means for continuously varying the wavelength setting of said monochromator means;
means for pulsing said source to produce flashes of radiation of output wavelength interval within said spectral emission for transmission to said fluid medium;
means for synchronizing said pulsing means with said motor means whereby said fluid medium is irradiated with optical energy corresponding to a particular wavelength interval within said spectral emission;
digital computer means having stored in memory a function representing the output energy intensity produced by said source of radiation over the entire continuum of wavelengths within said predetermined range versus the position of said motor means, said function including at least one uniquely discernible characteristic;
detector means receiving said flashes of radiation and producing electrical output signals corresponding to the actual output energy intensity from said source;
said computer means coupled to said pulsing means to produce a series of pulses of radiation to search for said at least one characteristic;
said computer means coupled to said detector means to receive said electrical output signals thereby determining the position of said motor means which corresponds to said at least one characteristic; and
means for automatically adjusting said function stored within said memory to correspond to the actual measured motor position of said at least one characteristic.

4,565,448
PARTICLE COUNTING APPARATUS
Scot D. Abbott, and Charles W. Robertson, Jr, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 11, 1983, Ser. No. 474,482
Int. Cl.[4] G01N *15/02*
U.S. Cl. 356—336 **20 Claims**



1. A cuvette for use in a radiation scattering particle counting apparatus adapted to count particles entrained in a medium flowable through the cuvette, the cuvette being adapted to optically define and brightly illuminate a viewing zone on the interior thereof through which the particles entrained in the medium pass, the particles each having a radius that is small as compared to the wavelength of the incident radiation and an index of refraction that is close to the index of refraction of the medium such that the particles each have a sensitivity limit of detection S of at least 0.129, the cuvette being formed from a material transparent to focused radiation and exhibiting an index of refraction close to the index of refraction of the medium, the cuvette having a cylindrical bore extending therethrough the axis which is parallel to the direction of particle flow through the cuvette, the cuvette also having a cylindrical surface on the exterior thereof, the axis of the cylinder on which the surface lies being perpendicular to the axis of the bore.

4,565,449
METHOD OF AND APPARATUS FOR DETERMINING REFRACTIVE-INDEX PROFILES OF CYLINDRICAL TRANSPARENT BODIES
Giorgo Grego, Turin, Italy, assignor to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy
Filed Feb. 8, 1983, Ser. No. 465,014
Claims priority, application Italy, Feb. 10, 1982, 67150 A/82
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—361 **13 Claims**

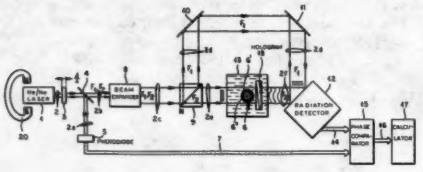
1. A method of determining the refractive-index profile of a generally cylindrical test object transparent to luminous radiation, the refractive index of said test object being constant at a given distance ρ from the axis thereof, comprising the steps of:
(a) generating a first and a second monochromatic beam of luminous radiations of constant frequencies differing slightly from each other;
(b) deriving from said first and second beams an electrical

reference wave of a beat frequency corresponding to the difference between the beam frequencies;

(c) transluminating the test object over the entire width thereof with parallel rays of said second beam in a plane transverse to the axis of said test object;

(d) mixing the transluminating rays of said second beam with rays of said first beam, avoiding the test object, in a field of radiation within said plane which lies downstream of the test object and extends over the entire width thereof;

(e) photoelectrically sampling said field of radiation at a multiplicity of closely spaced locations to produce respective electrical signals of the same beat frequency as said



reference wave but differing in phase therefrom to an extent dependent on the refractive index of the parts of the test object traversed by the respective transluminating rays;

(f) determining the phase differences between said signals and said reference wave at said locations;

(g) computing the refractive-index profile of the test object from said phase differences; and

(h) interposing a phase-shift compensator of known refractive-index profile in the path of said transluminating rays whereby the profile computed in step (g) represents deviations from the complement of the known profile of said compensator.

4,565,450

ARRANGEMENT FOR AND METHOD OF DETERMINING THE AMOUNT OF DAMPENING AGENT ON A PRINTING-IMAGE CARRIER

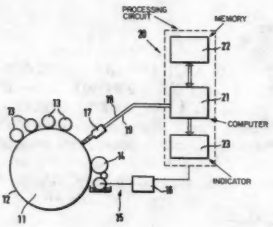
Burkhardt Wirz, Munich, and Rainer Kammüller, Wilnsdorf-Obersdorf, both of Fed. Rep. of Germany, assignors to Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 497,828

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220282

Int. Cl.⁴ G01J *3/50;* **B41L** *25/00*

U.S. Cl. 356—402 **32 Claims**



1. An arrangement for determining the amount of dampening agent on a printing-image carrier, said arrangement comprising:

(a) a radiation source for directing radiation at the carrier;

(b) first means for generating first signals in response to radiation which returns from the carrier add has a predetermined wavelength at least approximating an absorption wavelength of the dampening agent; and

(c) second means for generating second signals representative of the amount of dampening agent on the carrier, said second means being arranged to receive said first signals and to relate a preselected first signal generated while the carrier is substantially dry to another first signal generated while the carrier is damp, and said second means being designed such that the second signals are derived from the relationship between said preselected and other first signals, said second means being further arranged to receive and process a glancing signal so as to compensate for errors due to radiation which is directed towards the carrier from said source and glances off the dampening agent applied to the carrier.

4,565,451

METHOD AND APPARATUS FOR COMBINING GRANULAR COMPONENTS

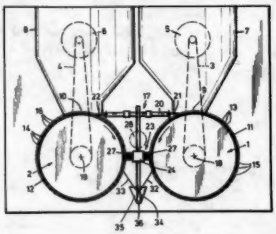
Eduard Winner, Weierstrasse 3, CH-9500 Wil, Switzerland

Filed Sep. 21, 1984, Ser. No. 653,494

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334013

Int. Cl.⁴ B01F *11/00, 15/04;* **B65D** *83/06;* **G01F** *11/24*

U.S. Cl. 366—108 **19 Claims**



1. An apparatus for combining granular components including combining said components in divided form and mixing them together by moving said components from spaced-apart locations into trajectories which cross one another to thus effect the mixing of said components; said apparatus comprising:

two drums having longitudinal axes disposed parallel to one another, with said drums being spaced apart adjacent to one another; said drums are rotatably driven in opposite directions, and are each provided with an outer surface;

a respective supply means associated with each of said drums for supplying said components thereto;

respective receiving means distributed over each of said drum surfaces for receiving said components from said supply means; and

an extraction device provided in the region between said drums for withdrawing said components from said receiving means in such a way as to impart thereto trajectories which cross one another in a mixing zone which is provided below said extraction device.

4,565,452

COOLING APPARATUS

Rudolf Wild, Heidelberg-Eppelheim, Fed. Rep. of Germany, assignor to Indag Gesselschaft, fur Industriebedard mbH, Heidelberg-Eppelheim, Fed. Rep. of Germany

Filed Jun. 1, 1983, Ser. No. 500,579

Int. Cl.⁴ B01F *15/06*

U.S. Cl. 366—149 **32 Claims**

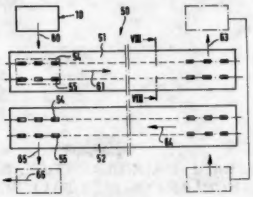
1. Apparatus for cooling substances, comprising:

container means for holding the substances, the container means having a central axis and mixing means coupled to an interior surface of the container means for mixing the

substances in the container means when the container means is rotated about the central axis;

tank means for receiving the container means and allowing motion of the container means parallel to the central axis of the container means;

movement means coupled to the tank means for rotating the container means about the central axis and moving the container means parallel to the central axis; and



cooling means in the tank means for at least partially surrounding the container means and cooling the substances within the container means;

whereby the rotation of the container means about the central axis causes mixing of the substances within the container means which are thereby substantially evenly cooled.

4,565,453

AGITATOR

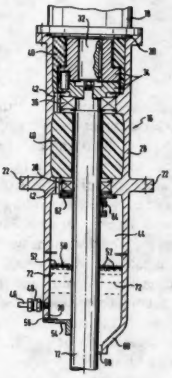
Herbert Jekat, Schopfheim; Rainer Junghaus, Lörrach; Walter Geng, Schopfheim, all of Fed. Rep. of Germany, and Vagn Petersen, Birkerod, Denmark, assignors to Ekato Industrieanlagen Verwaltungsgesellschaft mbH & Co., Schopfheim, Fed. Rep. of Germany

Filed Nov. 21, 1984, Ser. No. 674,017

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1983, 3341960

Int. Cl.⁴ B01F *7/16*

U.S. Cl. 366—279 **9 Claims**



1. An agitator for the agitation of liquid media, specifically for use in a completely submerged condition, comprising a motor; a shaft driven by said motor; agitating vanes mounted on the shaft; a submersible housing accommodating a portion of said shaft extending downwardly from said motor and being open in a downward direction; bearings mounted in said housing to support said shaft in said housing; and a coupling mounted between the motor and the shaft the bearings and the coupling being placed in said housing, said housing being filled with a gas with the formation of a gas cushion to prevent a medium from entering the bearings and the coupling, said housing having floats positioned at a lower part of the housing, the floats floating on a surface of the medium entering the housing and at least covering said surface.

4,565,454

TIME DISPLAY SYSTEM

Richard J. Walters, 396 Victoria Rd., Gladesville, New South Wales 2111, Australia

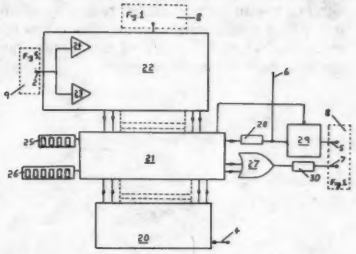
PCT No. PCT/AU83/00144, § 371 Date Jun. 7, 1984, § 102(e) Date Jun. 7, 1984, PCT Pub. No. WO84/01630, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 7, 1983, Ser. No. 619,049

Claims priority, application Australia, Oct. 7, 1982, PF6243

Int. Cl.⁴ G04C *11/02*

U.S. Cl. 368—47 **6 Claims**



1. A time display system for receiving at spaced instants of time, a time signal indicative of the time at that instant, and for controlling an analogue time display device having hands operable by a motor so as to indicate said time at said instant, said system comprising a decoder to said time signal, a position means adapted to generate a position signal indicative of the time displayed by said time display device, a comparator means connected to said decoder and said position means to detect the difference, if any, between the time according to said time signal and said displayed time, first offset means connected to said comparator means to provide a first predetermined offset between the time according to said time signal and said displayed time whereby said displayed time corresponds to a time zone determined by said first offset, and a second offset means connected to said comparator means to provide a second offset at a predetermined time whereby said displayed time is corrected for any daylight saving in said time zone, and time adjustment means to apply a time adjust signal to said time display device to reduce said difference to zero and apply said first and second offsets, said time adjust signal having an initial and a final portion in which the rate of time adjustment of said time display device is slowed from a maximum rate corresponding to that portion of said time adjust signal intermediate said initial and final portions.

4,565,455

HEAT REGULATING SENSOR TAPE

Frederick W. Bloore, Wightwick, and Peter H. Seaman, Tettanhall, both of United Kingdom, assignors to Hotfoil Limited, Wombourne, England

Filed Jan. 23, 1984, Ser. No. 573,008

Claims priority, application United Kingdom, Jan. 21, 1983, 8301666

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 374—164 **6 Claims**

1. In a heat regulating system including power supply means and power supply regulating means connected to said power supply means, the improvement comprising:

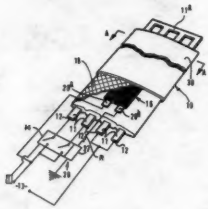
(a) a flexible, elongated heating tape including a flexible elongated, non-conductive outer sleeve,

(b) a flexible, elongated resistive heating element positioned within said outer sleeve, said heating element being generally coextensive with said outer sleeve and adapted to be connected to said power supply means via said power supply regulating means,

(c) a pair of spaced-apart, flexible, elongated electrical conductors positioned within said outer sleeve and being generally coextensive therewith, one of said conductors being adapted for connection to said power supply means and the other of said conductors being adapted for connection to said power supply regulating means,

(d) spacer means for maintaining said electrical conductors in spaced relation with respect to one another and with respect to said heating element,

(e) a substance in said outer sleeve in electrical contact with each of said conductors and spaced from said heating element by said spacer means, said substance having a significantly different electrical resistivity when said substance is at a temperature below a transition temperature range than when said substance is at a temperature above said transition temperature range,



(f) said pair of electrical conductors, said spacer means and said substance together forming a temperature sensor for activating said power supply regulating means, whereby when said heating element is connected to said power supply means via said power supply regulating means and said one of said conductors is connected to said power supply means and said other of said conductors is connected to said power supply regulating means, said power supply regulating means is activated by said temperature sensor to disrupt current flow from said power supply means to said heating element in response to a decrease in the resistance of said substance as said substance is heated to a temperature corresponding to said transition temperature range and said power supply regulating means is deactivated by said temperature sensor to allow current flow to said heating element in response to an increase in the resistance of said substance when the temperature of said substance subsides below said transition temperature range.

4,565,456

ELECTRONIC THERMOMETER

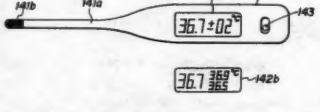
Takayuki Iida, Tokyo, and Tamio Miyake, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 13, 1984, Ser. No. 600,288

Claims priority, application Japan, Apr. 13, 1983, 58-65927; Mar. 7, 1984, 59-44522; Apr. 12, 1984, 59-56948

Int. Cl.[4] G01K 7/00

U.S. Cl. 374—169 **9 Claims**



1. An electronic thermometer, comprising a temperature sensor which senses the temperature of an object, a prediction temperature computing means for deriving a converged temperature according to the temperature sensed by the temperature sensor, a means for providing a range of error associated with the predicted converged temperature computed by the prediction temperature computing means, and a display means for displaying the range of error.

4,565,457

RADIAL, RADIAL ANGULAR-CONTACT, AND AXIAL ANGULAR-CONTACT BALL BEARING

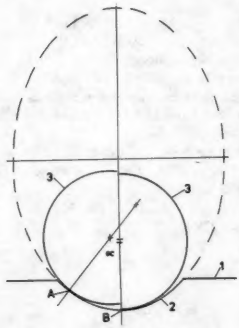
Hans Flander, Nuremberg, Fed. Rep. of Germany, assignor to Georg Muller Kugellager-Fabrik K.G., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 840,153, Oct. 7, 1977, abandoned. This application Jul. 10, 1981, Ser. No. 281,933

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1976, 2645287

Int. Cl.[4] F16C 33/58

U.S. Cl. 384—450 **7 Claims**



1. In a bearing capable of operating either as a radial ball bearing, a radial angular-contact ball bearing, or an axial angular-contact bearing, coaxial inner and outer race means respectively formed with ball grooves which face each other, and a plurality of balls of a given ball radius situated between said inner and outer race means and extending into said grooves thereof for rolling with respect to said inner and outer race means in said grooves, the improvement wherein at least one of said race means has at said groove thereof, in any axial plane containing the common axis of said race means, a cross-sectional configuration according to which the innermost part of said groove of said one race means has a radius of curvature which is greater than at least about 51.6% of the diameter of said ball while having a radius of curvature which increases in a continuous manner from said innermost part of said groove of said one race means toward each of a pair of opposed outer side edges of said groove, with the difference between the radius of curvature of said groove and said ball radius increasing from said innermost part of said groove to each of said side edges of said groove by at least a factor of 2, and wherein when the ball is in contact with the innermost part of the race groove the radial clearance between the ball and race groove in at least regions of said race groove proximate to each groove side edges is greater than what the radial clearance would be if the race curvature were that of a circle whose radius is substantially 51.6% of the diameter of the ball.

4,565,458

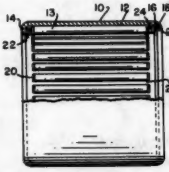
ROLLER BEARING

John D. Achee, and Anthony Cuozzo, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 353,673, Mar. 1, 1982. This application Jul. 9, 1984, Ser. No. 628,957

Int. Cl.[4] F16C *43/04, 33/64*

U.S. Cl. 384—561 2 Claims



1. A roller bearing comprising: a carburized and hardened member formed in the soft from low carbon flat sheet metal, and having a tubular roller race with a longitudinal portion thereof providing a roller raceway; said member having an integral inwardly-turned flange at one end to provide an axial thrust face at one end of a roller means, the other end of said member having an annular shoulder and an integral flange turned inwardly through an angle of approximately 90 degrees to form a circumferential groove with the flange having an inside diameter sufficiently large to permit the easy insertion of roller means; roller means inserted in said member and including a plurality of rollers in contact with the roller raceway; and a split ring having a portion thereof inserted into the circumferential groove and constructed to provide an axial thrust face for the roller means.

4,565,459

PHONETIC CHINESE PRINTING APPARATUS

Gilbert DiLucia, 800 Fifth Ave., New York, N.Y. 10021

Filed Jun. 4, 1984, Ser. No. 615,923

Int. Cl.[4] B41J *5/00*

U.S. Cl. 400—110 1 Claim

茶凹恩耳而翁也牙音安

請我意日他永屋宜哦平

是月圓允外威萬王印涯

阿司的父國火已看丁盈

要有愛艾言羊迎子娃

中西才么不你們問

1. A phonetic Chinese printing apparatus for communication in the Chinese language, wherein a font is provided of a group of characters comprising a phonetic alphabet, the improvement wherein said characters are conventional characters of the Chinese language, said apparatus being adapted to reproduce only 57 characters of the Chinese language, said font consisting of the font of characters illustrated in FIG. 3.

4,565,460

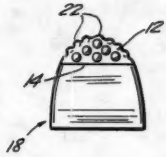
CONVEX KEY TOP CONFIGURATIONS

Alva C. Kline, 35 Hewes St., Brentwood, N.Y. 11717

Filed Mar. 5, 1984, Ser. No. 586,427

Int. Cl.[4] B41J *5/12*

U.S. Cl. 400—490 7 Claims



1. A keyface attachable to a keystem of a keyboard which includes a plurality of keystems arranged in a predetermined order, each keystem having a contoured surface area normally facing upwardly, comprising in combination

an element which has

an operative upper surface which is convex, has a substantially predetermined smallest radius of curvature, has a prearranged pimpled surface area which is formed with a plurality of projections in the range of about 500 to about 1000, each projection extending at a height from said uper surface which is substantially smaller than said smallest radius, and

an operative lower surface attachable to said contoured surface area, and defining an area substantially matching at least a portion of said contoured surface area, said element being dimensioned so as to be free from interfering with a similar element of a neighbouring keystem of said keyboard.

4,565,461

PITCH-CHANGEABLE, CAM-ACTUATED PAPER FEED FOR SERIAL PRINTER

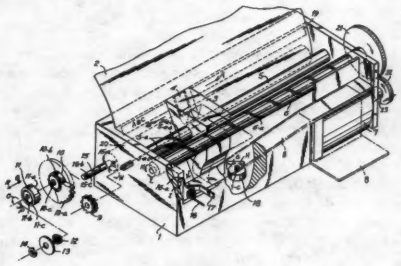
Minoru Usui, and Toshiaki Oshima, both of Shiojiri, Japan, assignors to Epson Corporation, Nagano, Japan

Filed Sep. 16, 1983, Ser. No. 533,032

Claims priority, application Japan, Sep. 17, 1982, 57-162760; Sep. 17, 1982, 57-162761

Int. Cl.[4] B41J *15/04*

U.S. Cl. 400—611 11 Claims



1. A serial printer for printing on a sheet of recording paper, said printer having a print head moveable in a lateral direction perpendicular to the direction of feeding of said sheet of recording paper, said print head printing on a portion of said sheet confronting said print head, comprising:

carriage means supporting said print head thereon;

drive means for reciprocally moving said carriage means laterally, advancing in a first direction and returning in a second direction;

paper feed pitch selection means for selecting among a plurality of paper feed pitches, said selection of pitch being dependent on the lateral distance of movement of said carriage means in said first direction;

paper feed means for feeding said sheet of recording paper, said paper feed means being driven by said paper feed pitch selection means, said pitch selection means including a paper feed cam having at least two paper feed grooves therein, and at least one paper feed pitch changing groove for connecting between said at least two paper feed grooves;

paper feed cam drive means connected to and moving with said carriage means for engaging said grooves of said paper feed cam for driving said paper feed cam as said carriage means moves, said cam drive means and said selection means engaging a particularly selected feed groove in dependence upon the lateral position of said carriage means in said first direction when said reciprocal motion is changed from said first to said second direction, said paper being advanced in said direction of feeding by different distances for each said groove.

4,565,462

PAPER LOADING APPARATUS FOR PRINTER INCLUDING PLURAL FEED PATHS

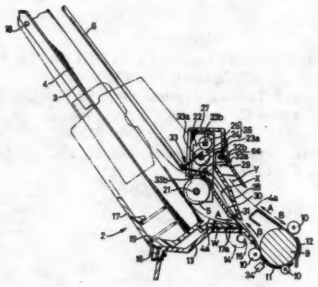
Takemi Yamamoto; Susumu Kuzuya; Isao Kagami, and Yuuichi Takenaka, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 15, 1983, Ser. No. 551,883

Claims priority, application Japan, Nov. 20, 1982, 57-204246; Nov. 20, 1982, 57-175692[U]

Int. Cl.⁴ B41J *13/10*

U.S. Cl. 400—625 **5 Claims**



1. A paper loading apparatus for a printer wherein sheets of paper are moved by a paper feeding device to a printing device for impression of characters on the paper along a line of printing, which comprises:

a paper stacker for storing a stack of said sheets of paper of one kind;

a feed roller engageable with the top of said stack and rotatable for feeding along a first paper path the individual sheets of paper one after another in one direction from said paper stacker toward said paper feeding device;

a first paper guide defining a part of said first paper path and having a plurality of recesses,

control means for controlling said paper feeding device such that the sheets of paper fed from said paper stacker by said feed roller are first moved in said one direction into said printing device and subsequently moved in a reverse direction opposite to said one direction; and

guide means for guiding said sheets of paper moving in said reverse direction along a second paper path in which said sheets of paper are free from engagement with said feed roller,

said guide means including trap means comprising a generally comb-shaped member having a plurality of teeth which extend toward a guiding surface of said first paper guide with the ends of said teeth located in the vicinity of said guiding surface, said plurality of teeth being accommodated in said plurality of recesses, a depth of said recesses as viewed substantially across said second paper path being greater than a thickness of said teeth, said generally comb-shaped member having a first surface which forms an acute angle with respect to said guiding surface on the side of said paper stacker, and a second surface which forms an obtuse angle with respect to said guiding surface of the side of said printing device, said generally comb-shaped member permitting said sheets of paper to pass between said ends of the teeth and said guiding surface in said one direction along said first paper path, but preventing a trailing end of said sheets of paper past said ends from returning along said first paper path in said reverse direction and thereby guiding said trailing end along said second paper path when said sheets of paper are moved in said reversed direction by said paper feeding device.

4,565,463

AQUEOUS INK CARTRIDGE WITH TWO PART VENT PLUG

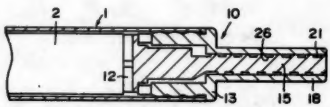
Kunihiko Otaguro, Gunma; Hiroshi Takahashi, Saitama; Kazuma Noguchi, Tokyo; Takeshi Toyama, Saitama; Takashi Ishikawa, and Isao Ebisawa, both of Ibaraki, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1984, Ser. No. 592,337

Claims priority, application Japan, Mar. 20, 1983, 58-44837; Mar. 23, 1983, 58-41908; Mar. 29, 1983, 58-45228; Mar. 30, 1983, 58-44826; Mar. 31, 1983, 58-47520

Int. Cl.⁴ B43K *7/02*

U.S. Cl. 401—217 **5 Claims**



1. A writing instrument cartridge for being projectably mounted in a casing of a writing instrument, said cartridge comprising:

a filler impregnated with aqueous ink;

ink feeding means connected to said filler;

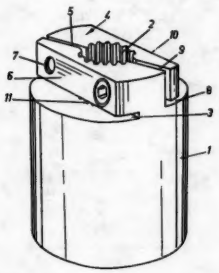
a writing point at one end of the cartridge to which said ink feeding means is connected; and

an end plug at the other end of said cartridge with one end exposed outside and the other end inside said cartridge, said end plug having an unapertured inner member and an outer member receiving said inner member therewithin and having at least part of the inner surface thereof spaced from the outer surface of said inner member to define an air passage between said inner member and said outer member extending from said one end to the other end of said end plug, said air passage having a size and shape for, when the difference in atmospheric pressure between the inside and the outside of said cartridge is 0.02 atm. passing an amount of air therethrough within the range of 0.02 to 1 cc/sec.

4,565,464
CLAMPING JOINT

Sven W. Nilsson, Partille, Sweden, assignor to SKF Nova AB, Goteborg, Sweden

Filed Sep. 12, 1984, Ser. No. 649,948
Claims priority, application Sweden, Oct. 5, 1983, 8305459
Int. Cl.[4] F16B 2/02
U.S. Cl. 403—290 4 Claims



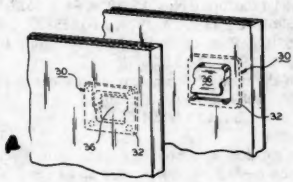
1. A device for clamping onto a shaft, comprising:

a body element (1) having a bore (2) passing through one end thereof for receiving said shaft and forming a bore wall therein, said body element (1) having a first slot (3) extending through a portion of said body in a plane substantially perpendicular to the axis of said bore and extending through a portion of said bore wall, and having a second slot (5) in a plane substantially parallel to said axis and extending axially through a portion of said one end such that it connects with said first slot (3), the result of said slots and bore forming a first deformable portion (6) in said one end and having third (8) and fourth (9) slots corresponding to and diametrically opposed to said first (3) and second (5) slots, respectively and lying in the same planes thereof, forming a second deformable portion (10) symmetrically disposed to said axis in relation to said first deformable portion (6) said deformable portions connected to said body portion at diametrically opposed locations and means (7) for varying the widths of said second (5) and fourth (9) slots so that said first (6) and second (10) deformable portions clamp said shaft therebetween, whereby a symmetrical clamping device is provided, said body element and first and second deformable portions forming a unitary, one-piece assembly.

4,565,465
CONNECTORS FOR CORRUGATED MATERIALS

Steven M. Oberst, St. Charles, Ill., assignor to Acorn Box Company, Bedford Park, Ill.

Filed Jan. 26, 1984, Ser. No. 573,879
Int. Cl.[4] B25G 3/00; F16B 7/08
U.S. Cl. 403—407.1 6 Claims



1. A female connector for attachment to a first piece of corrugated material and also for attachment to another connector which is carried on a second piece of corrugated material, to securely and removably hold two pieces of corrugated material together, said female connector comprising:

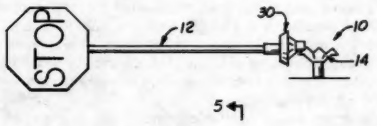
a back portion for attachment to corrugated material;

a front wall, and sidewalls attached to said front wall and said back portion to define a receiving pocket having an open top, said sidewalls defining locking protuberances on each side of the pocket that extend into said pocket, said front wall being in non-parallel, skewed relation with said back portion, whereby said locking protuberances are positioned to cooperate with a flange portion of another connector having locking slots which enters said receiving pocket.

4,565,466
RETURN JOINTED SIGN POST PEDESTAL

Paul R. Daggs, Rte. No. 2, Box 159-H, Yukon, Okla. 73099; Arthur C. Wilkowske, Rte. 3, Box 132-W, El Reno, Okla. 73036, and Gordon D. Miller, Rte. 2, Box 79, Calumet, Okla. 73014

Filed Jun. 21, 1984, Ser. No. 623,205
Int. Cl.[4] E01F 9/01
U.S. Cl. 404—10 10 Claims

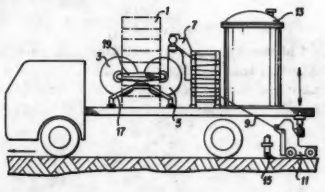


8. The apparatus of claim 7 wherein said top member is further characterized to include an annular plate attached to the top thereof with a vertically positioned tubular member adapted for attachment to said sign post connected thereto.

4,565,467
METHOD AND APPARATUS FOR THE CONTINUOUS LAYING ROAD MARKING STRIPS ONTO ROADWAY SURFACES

Ludwig Eigenmann, POB 114 CH 6833, Vacallo, Switzerland

Filed Dec. 16, 1983, Ser. No. 562,404
Claims priority, application Italy, Dec. 24, 1982, 24973 A/82
Int. Cl.[4] E01C 23/16
U.S. Cl. 404—72 11 Claims



1. An auxiliary, or supplemental, apparatus for mounting onto the type of machine which applies markings to road surfaces using the spray method, designed to provide the said machines with the additional capability of being able to lay prefabricated, road-marking strips, characterized by the fact that the said apparatus is mounted onto the outer side of the road-marking machine and that it guarantees uninterrupted laying of prefabricated road-marking strip at running velocity, by means of the use of a device cutting from a reel, and a means for pressing the strip to the road surface avoiding the accumulation of dirt which could compromise the efficiency of the signaletic capacity, and that both devices are controlled by a cam which also contemporaneously controls the action of the spray device of the machine itself which applies the pretreat-

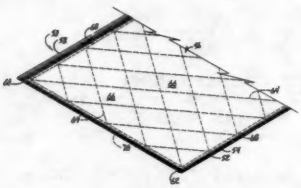
ment liquid to the road surface receiving the length of the prefabricated road marking strip.

4,565,468

MOISTURE IMPERVIENT BARRIER AND METHOD FOR MAKING SAME

Leslie A. Crawford, 1010 NE. Crestmoor, Ankeny, Iowa 50021

Filed Oct. 24, 1983, Ser. No. 544,503
Int. Cl.[4] E02D *3/12*
U.S. Cl. 405—270 **8 Claims**



1. A device for providing a moisture impervient barrier comprising:

a flexible base sheet member having an upper surface, a lower surface and a longitudinal axis, said base sheet member being comprised of a material which is gas permeable in any direction within the plane defined by said base sheet member so as to permit gases to escape through said base sheet member;

a layer of water swellable bentonite resting on said base sheet member, said bentonite layer having a constant thickness;

an elongated flexible top sheet member resting upon the top of said layer of bentonite;

securing means comprising a plurality of thread stitches extending through said base sheet member, said bentonite, and said top sheet member at a plurality of locations for securing the same together, said stitches spanning the distance between said base sheet member and said top sheet member so as to maintain a substantially uniform thickness for said bentonite layer;

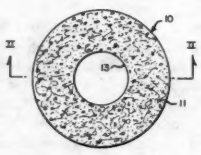
said stitches dividing said spaced apart base and top sheet members into a quilted pattern forming a plurality of four sided compartments, each of said compartments containing a portion of bentonite.

4,565,469

CRIBBING

Nicholas Chlumecky, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Continuation-in-part of Ser. No. 411,583, Aug. 26, 1982, Pat. No. 4,497,597. This application Nov. 13, 1984, Ser. No. 670,951
Int. Cl.[4] E21D *11/00*
U.S. Cl. 405—288 **13 Claims**



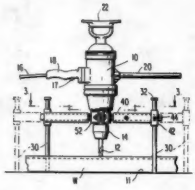
1. A crib member for use in superimposed layers as cribbing in an underground cavity such as a mine comprising a circular concrete member of small substantially uniform thickness relative to its diameter whereby each said member can be rolled into position on its outer periphery and stacked with full surface contact between successive members free of edge loading between member and the bottom member can be rotated about its axis to level an uneven base surface, said member being formed of fibre reenforced concrete whereby brittle failure is prevented.

4,565,470

APPARATUS FOR HAND DRILLING

Karl A. Karlsson, Järna, Sweden, assignor to William E. Mouzavires, Oakton, Va., a part interest

Filed Jul. 12, 1982, Ser. No. 397,537
Int. Cl.[4] B23B *45/14*
U.S. Cl. 408—72 R **21 Claims**



1. Portable hand-drilling apparatus comprising in combination, a portable hand drill having a body and a chuck mounted to the body for rotation, at least one handle projecting from the body above the chuck for manipulating the drill, a yoke positioned between the handle and chuck and releasably fixed to the body against rotation and having an arm projecting laterally therefrom, an elongated rigid load transfer member having a free end adapted to be freely engaged against a side of a workpiece to be drilled, means mounting the arm to the load transfer member against rotation relative thereto while permitting the arm together with the yoke and drill to move along the load transfer member such that during a drilling operation the free end of the load transfer member is placed against the side of the workpiece to transfer torque through the load transfer member and laterally onto the workpiece to divert torque stress from the user's body while securing the hand drill to the workpiece without positively attaching the load transfer member to the workpiece, said means including a holder receiving said arm for slidable movement of said arm relative to the holder into one of a plurality of selectable positions, said holder having mounting means slidably receiving the load transfer member to allow the holder together with the arm and drill body to move along the load transfer means, and wherein there is further included means releasably fixing the arm to said holder in a selected position.

4,565,471

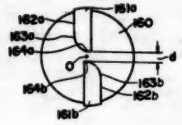
DRILL BIT

Hideo Negishi; Kaoru Goto, both of Tokyo, and Sueji Takaya, Kawasaki, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 192,627, Sep. 30, 1980, Pat. No. 4,373,839. This application Sep. 30, 1982, Ser. No. 428,717
Claims priority, application Japan, Oct. 2, 1979, 54-127046; Nov. 15, 1979, 54-158626[U]; Nov. 15, 1979, 54-158627[U]; Nov. 15, 1979, 54-158628[U]; Dec. 29, 1979, 54-182582[U]; Dec. 29, 1979, 54-182583[U]; Feb. 15, 1980, 55-17567; Jul. 10, 1980, 55-94389; Aug. 28, 1980, 55-122286[U]
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—204 **14 Claims**

1. A drill bit for drilling a hole in a metal workpiece which comprises a body having a shank portion and an end face at its forward end and an axis of rotation therethrough, said body having at its forward end a pair of cutting means each having at least one cutting edge, said cutting edges being disposed symmetrically relative to said axis of rotation of said drill bit,

an inner portion of each cutting edge remote from the outer periphery of said bit body being generally convex when viewed from the forward end of said bit body, at least a part of the innermost sections of said inner portions of said cutting edges being equally spaced from said axis of rotation a distance between 0.1 to 1.25 mm to thereby define a recess having



opposed walls between said cutting means, the depth of said recess being not less than 0.2 mm whereby a central core formed in said recess during a drilling operation will be twisted off by the opposed walls of said recess prior to the core engaging the base of the recess, and the opposed walls of said recess extending parallel to said axis of rotation.

4,565,472

DRILL FOR HAND-HELD DRILLING DEVICES

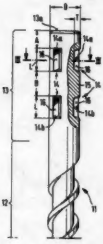
Ernst Brennsteiner, Munich, and Dieter Scholz, Unterpfaffenhofen, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan Fürstentum, Liechtenstein

Continuation of Ser. No. 434,053, Oct. 13, 1982, abandoned. This application Apr. 29, 1985, Ser. No. 727,207

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144826

Int. Cl.[4] B23B *51/00, 31/08;* **E21B** *10/36*

U.S. Cl. 408—226 **10 Claims**



1. A drill for use in a hand-held drilling device comprises an axially elongated shank arranged to be inserted into the hand-held device, said shank having an axially extending outside circumferential surface with a closed ended axially extending groove formed in the axially extending outside circumferential surface and said groove having ends extending transversely of the axially extending direction thereof, wherein the improvement comprises that said shank has a leading end, a trailing end, and a diameter D, the axially extending distance between the trailing end of said shank and the adjacent end of said axially extending groove is in the range of 0.3 to 1 times the diameter D of said shank, at least one web is located within said axially extending groove extending in the axially extending direction of said groove and also transversely thereof and divides said groove intermediate the ends thereof into axially extending groove sections, the surface of said web is located in the outside circumferential surface of said shank, each said groove section has a base spaced radially inwardly from the outside circumferential surface of said shank with said base extending parallel to the axis of said shank and each said groove section having opposite ends spaced apart in the axial direction with said groove section ends forming shoulders extending transversely of the axial direction.

4,565,473

DRILL

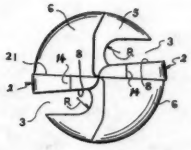
Toshiaki Hosoi, 9-10, Kami-minami 5-chome, Hirano-ku, Osaka, Japan

Continuation of Ser. No. 290,130, Aug. 5, 1981, abandoned. This application Feb. 14, 1984, Ser. No. 579,289

Claims priority, application Japan, Aug. 29, 1980, 55-120463; Oct. 30, 1980, 55-153639

Int. Cl.[4] B23B *51/02*

U.S. Cl. 408—229 **12 Claims**



1. A drill of enhanced torsional rigidity for drilling deep holes comprising a shank having discharging flutes, a pair of cutting edges each of said cutting edges having an arcuate central edge portion and a generally straight outer edge portion, a stepped portion between said arcuate central edge portion and said straight outer edge portion, said arcuate central edge portion being longitudinally spaced from said straight outer edge portion, said stepped portion constituting a generally longitudinally disposed surface, said arcuate central edge portion being constructed and arranged with an arcuate configuration so as to form compact and relatively small curled inner chips, said straight outer edge portion being constructed and arranged with a generally straight configuration so as to form generally straight, strip-shaped outer chips separated from said inner chips and having a width corresponding to the width of said straight outer edge portion, said flutes having a flute width ratio which is within the range of 0.5 to 0.02 such that said strip-shaped outer chips are prevented from curling by the inside walls of said flutes, whereby the formation of said uncurled outer chips enables smooth discharge of said outer chips along with said compact and curled inner chips through said flutes.

4,565,474

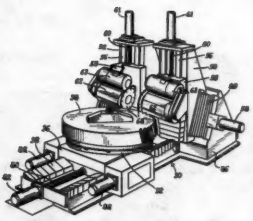
METHOD OF GENERATING INVOLUTE TOOTH FORMS WITH A MILLING CUTTER

Paul A. S. Charles, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Continuation-in-part of Ser. No. 207,225, Nov. 1, 1980, abandoned. This application Apr. 15, 1983, Ser. No. 485,408

Int. Cl.[4] B23F *5/20*

U.S. Cl. 409—51 **40 Claims**



1. In the manufacture of a gear, the method of machining a

gear blank to produce a tooth profile which is involute from an imaginary base surface of revolution within said gear blank, said surface having a straight-line generatrix and having an imaginary plane of action tangent to said surface,

said method comprising the steps of

rotating a cutter having a plurality of cutting edges uniformly spaced about the entire periphery of the cutter sweeping a cutting path in the form of a surface of revolution about the axis of the cutter so that said plurality of cutting edges are distributed substantially uniformly about the common surface of revolution which they define, said cutting-path surface comprising a plunge-cutting rim portion of cutting thickness not exceeding the desired tooth space at the tooth root and a contiguous tooth-profile cutting portion,

positioning the rotating cutter on the side of said plane of action opposite to said base surface with said rim portion penetrating said plane of action and with said tooth-profile cutting portion intersecting said plane of action along a predetermined generating line and with said tooth-profile cutting portion perpendicular to said plane of action at least at the center of said generating line,

independently controlling the rotation of the cutter, and

effecting a relative feeding movement of said gear blank and rotating cutter independently of the rotation of the cutter while maintaining the aforesaid position of the cutter relative to said plane of action,

said feeding movement being such as:

to cause a relative rolling motion between said base surface and said plane of action without slippage;

to cause said generating line at all points therealong to maintain a controlled angularity with respect to the instantaneous direction of its movement relative to the line of tangency of said base surface with said plane of action during said rolling motion; and

to cause said rotating cutter to penetrate said gear blank and said generating line to traverse said gear blank between its addendum surface and a depth at which the desired active tooth-profile is achieved at the center of said generating line.

4,565,475

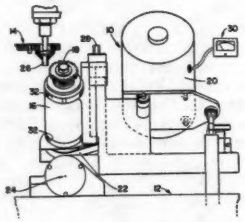
DRILL POINT MILLING MACHINE AND METHOD

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 097,460, Nov. 26, 1979, abandoned. This application Mar. 2, 1983, Ser. No. 471,919

Int. Cl.[4] B23G *9/00*

U.S. Cl. 409—131 **6 Claims**



1. An apparatus for consistently producing drill screws within exacting tolerances, said screws having drilling tips with at least two flutes and said apparatus including a rotating turret for intermittently conveying successive screw blanks having exposed shanks along a path of travel and at least one cam operated milling station adjacent said path, said station including a motor driven spindle for mounting rotary cutting tools used to form said drilling tips, said cutting tools including at least one pointing cutter for forming a heel surface on said screw blank, wherein the improvement comprises:

(a) means for forming said drilling tips which include a plurality of form relieved milling cutters, said pointing cutter being one of said plurality of milling cutters and, said pointing cutter having a concave profile to provide means for varying the size and orientation of said heel surface movement parallel to the axis of rotation of said pointing cutter and meant to adjust the axial position of said pointing cutter,

(b) means for rotating said cutters at a rate of approximately 1000 surface feet per minute and,

(c) means for firmly holding said screw blanks against uplift and rotational forces resulting from interaction between said blanks and said cutters, said holding means being capable of exerting a downward axial force on said blanks of between 200 and 350 pounds.

4,565,476

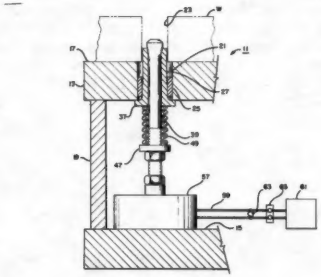
INTERNAL HYDRAULIC CLAMP

Donald F. Smith, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Filed Jan. 16, 1984, Ser. No. 570,972

Int. Cl.[4] B23Q *3/06*

U.S. Cl. 409—225 **8 Claims**



1. A device for securing a workpiece to a support surface of a fixture for performing machining operations, comprising:

a mandrel adapted to be carried in a passage provided in the fixture support surface and having an upper end that is expansible and is adapted to extend into a hole provided in the workpiece, the mandrel having a flange on its lower end that is larger in diameter than the passage;

an expander stem carried within a bore of the mandrel, having an upper end that protrudes past the upper end of the mandrel and is adapted to be recessed within the hole in the workpiece, the upper end of the stem being tapered and larger in diameter than the bore of the mandrel;

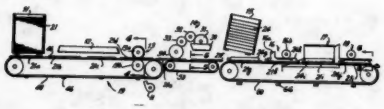
hydraulic means for pulling downwardly on the stem with hydraulic force; and

spring means for applying an upward force on the mandrel, causing the flange to bear against the lower side of the support surface while the stem is in an upper position, to initially prevent downward movement of the mandrel to expand the upper end of the mandrel into gripping engagement with the workpiece as the stem moves downwardly, the hydraulic force subsequently pulling the mandrel downwardly with the stem after the mandrel grips the workpiece, for tightly securing the workpiece to the support surface, the device being free of any structure below the flange for stopping movement of the mandrel once the stem begins pulling the mandrel downwardly.

4,565,477
METHOD OF CASING-IN BOOKS

Herbert R. Axelrod, Neptune City, N.J., assignor to permaTek, Inc., Las Vegas, Nev.

Continuation of Ser. No. 321,541, Nov. 16, 1981, abandoned. This application Jun. 6, 1984, Ser. No. 617,837
Int. Cl.[4] B42C 11/00
U.S. Cl. 412—5 17 Claims

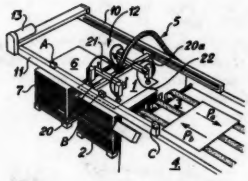


1. A method for casing-in a plurality of books, each book comprising book case and book block components, using continuous movement conveyor means having a central axis along its direction of movement for transporting said components, wherein a typical book case has opposite first and second side parts and a central back strip therebetween and opposite inside and outside faces of said side parts and back strip, and a typical book block has opposite first and second outer sides and a spine therebetween, the method for casing-in each book comprising the steps: placing said book case with its outside face downward upon the conveyor means, its inside face upward, and its central back strip aligned generally parallel with said central axis of the conveyor means; forming said central back strip to receive the spine of said book block by heating and then passing said central back strip between a pair of forming pressure rollers; applying glue to said inside face of said book case only once in this method, namely when the book case is in continuous movement as it is moved by said conveyor means after said forming step; placing and aligning said book block with its first outer side upon said glued inside face of said first side part of said book case; folding said glued inside face of said second outer side part of said case over and around the spine of said book block and into contact with said second side of said book block; and applying pressure urging said glued surfaces of said book case and said book block to adhere together.

4,565,478
MATERIALS HANDLING DEVICE

Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Feb. 26, 1981, Ser. No. 238,168
Claims priority, application Sweden, Feb. 3, 1981, 8100787
Int. Cl.[4] B65G 57/04, 60/00
U.S. Cl. 414—71 4 Claims

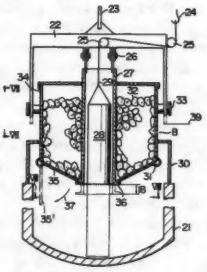


1. In a printing environment in which a sheet on which information to be printed is moved from a stack of sheets to a register position for a subsequent printing operation and in which a sheet having information printed thereon is moved from a finish position onto a stack of printed sheets, a materials handling device for automatically performing at least one of the operations of moving a sheet from a stack to the register position and moving a printed sheet from the finish position to a stack, comprising a transport track defining an axis of translation extending between at least one of said register and finish positions and at least one stack of sheets, a device capable of picking up and holding a sheet and translatable along said axis, means for moving said pick-up and hold device along said axis, at least three position sensors disposed at spaced locations along said transport track, one of said sensors being located at said register or finish position and another one of said sensors being located at said stack, at least two of said sensors being movable along said transport track, a plurality of knobs each having a number of settings equal to the number of sensors, each knob being assigned to one of the operations of picking up a sheet or releasing a sheet, and means responsive to said position sensors for controlling said moving means and said pick-up and hold device to move to the position and perform the operations indicated by each of said knobs in sequence so as to move said device over said stack and carry out one of the operations of picking up a sheet or dropping one onto the stack and then move to said register or finish position and perform the other of said operations.

4,565,479
RAW MATERIALS CHARGING DEVICE FOR PREHEATING FURNACE

Masahiko Seki; Hiroshi Nakatani; Shozo Minami, and Katsuya Kogumasaka, all of Kitakyushu, Japan, assignors to Nippon Steel Corp., Kitakyushu, Japan

Filed Mar. 5, 1984, Ser. No. 586,463
Claims priority, application Japan, Mar. 10, 1983, 58-34426[U]
Int. Cl.[4] B66C 3/00
U.S. Cl. 414—199 8 Claims



1. A raw materials charging device comprising:

a bucket for charging raw materials, said bucket having a main body and a bottom plate movable between a closed position and an open position for introducing a charge of said raw materials from said main body into a furnace;

an outer cylindrical member;

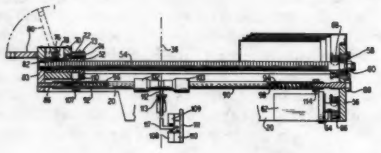
an inner cylindrical member positioned coaxially and vertically movable in the outer cylindrical member, both of said cylindrical members being located in the main body of the bucket coaxially therewith; and

means for moving said inner cylindrical member out of said outer cylindical member and into said furnace before introducing said charge into said furnace and for moving said inner cylindrical member out of said furnace and into said outer cylindrical member after introducing said charge into said furnace so as to form a passage in said charge for heating said raw materials with a gas.

4,565,480
CAROUSEL PALLET SHUTTLE

Edward Merk, Long Beach; George Delaney, Laguna Hills; Leon Wasynczuk, Torrance; Richard Parks, Mission Viejo, and Richard Polacek, Palos Verdes, all of Calif., assignors to Burgmaster - Houdaille, Inc., Los Angeles, Calif.

Filed Sep. 7, 1982, Ser. No. 415,548
Int. Cl.[4] B65H 5/18
U.S. Cl. 414—225 9 Claims



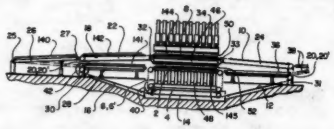
1. A carousel pallet shuttle adapted for use with a plurality of pallet storage locations oriented in a circular arrangement, comprising a rotatable support member, a rectilinearly movable pallet shuttle member mounted on said rotatable support member for movement in an axial direction relative to said rotatable support member, said pallet shuttle member having a latch member adapted to releasably connect said pallet shuttle member with a pallet located at one of said pallet storage locations, and drive means for moving said pallet together with said pallet shuttle member onto said rotatable support member whereby said pallet is free to rotate past other pallet storage positions, said drive means comprising a drive member for selectively rectilinearly moving said pallet from said rotatable support member to a machining position in operative association with a machine tool and a lost motion linkage for automatically engaging said latch member, in response to motion of said drive member, before said pallet is pulled onto said rotatable support member, and for automatically disengaging said latch member, in response to motion of said drive member, after said pallet is moved off of said rotatable support member, said lost motion linkage comprising a rack and pinion linkage interconnected between said drive member and said latch member for rotating said latch member in response to rotation of said pinion, and spring means for preventing rotation of said pinion except when said drive member is in a fully extended condition.

5. A carousel pallet shuttle adapted for use with a plurality of pallet storage locations oriented in a circular arrangement, comprising a rotatable support member, a rectilinearly movable pallet shuttle member mounted on said rotatable support member for movement in an axial direction relative to said rotatable support member, said pallet shuttle member having a latch member adapted to releasably connect said pallet shuttle member with a pallet located at one of said pallet storage locations, and drive means for moving said pallet together with said pallet shuttle member onto said rotatable support member whereby said pallet is free to rotate past other pallet storage positions, said drive means selectively rectilinearly moving said pallet from said rotatable support member machining position in operative association with a machine tool, said drive means comprising a lost motion linkage for automatically engaging said latch member before said pallet is pulled onto said rotatable support member, and for automatically disengaging said latch member after said pallet is moved off of said rotatable member, said drive means comprising a drive screw and a drive screw nut threadably mounted thereon and adapted for rectilinear movement in response to the rotation of said drive screw, and said lost motion linkage comprising a housing member mounted for rectilinear sliding motion relative to said drive and said nut for mounting said latch member, and a spring member for normally maintaining a separation between a portion of said drive screw nut and said housing member.

4,565,481
APPARATUS FOR LOADING AND UNLOADING A DOUBLE OPENING PRESS FOR MANUFACTURING FIBREBOARD

Giorgio Pagnoni, Monza, Italy, assignor to F.LLI Pagnoni S.p.A., Italy

Continuation-in-part of Ser. No. 341,253, Jan. 21, 1982, abandoned. This application May 17, 1984, Ser. No. 611,408
Claims priority, application Italy, May 21, 1981, 21914 A/81
Int. Cl.[4] B29J 5/08; B65G 65/02
U.S. Cl. 414—285 4 Claims



1. An apparatus for loading and unloading a multi-opening press for manufacturing fibreboard, the press having a lower part (48), an upper part (46) and an intermediate part (34) between the upper and lower parts defining upper and lower openings, comprising:

a first bearing support (30);

a second bearing support (31) spaced from said first bearing support;

a first endless conveyor movable through the upper opening (50) in a first feed path from said first bearing support to said second bearing support, said first endless conveyor movable in said first feed path in a feed direction, and formed of a plurality of conveyor sections (8, 10, 12, 14, 16, 18) spaced along said first conveyor and two spaced drive members (20,20') connecting said plurality of conveyor sections together and spaced sufficiently to permit passage of the fibreboard to be processed by the upper and the intermediate parts of the press, said first endless conveyor extending under the lower part (48) of the press;

a second endless conveyor movable through the lower opening (52) and in a second feed path, said first conveyor intersecting said second feed path at a pair of spaced locations of intersection, each location of intersection adjacent one of said bearing supports so that a board on said second feed path can move between said two spaced drive members (20,20') and two adjacent ones of said plurality of conveyor sections of said first endless conveyor:

an upper loading table (22) upstream of the upper opening (50) on said feed path and in said feed direction, pivotally mounted at one end thereof (32) to the intermediate plate (34) and at an opposite end therof to said first bearing support (30); and

an upper unloading table (24) downstream of the upper opening (5) on said first feed half and in said feed direction, pivotally mounted at one end (33) thereof to the intermediate plate (34) and at an opposite end thereof to said second bearing support (31).

4,565,482
WHEELCHAIR DOCKAGE AND STORAGE SYSTEM

Gary W. Baker, Troy, Mich., assignor to Autodynamics Corporation of America, Madison Heights, Mich.

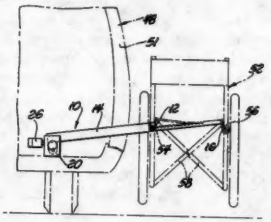
Filed Nov. 22, 1982, Ser. No. 427,507
Int. Cl.[4] B60P 1/48
U.S. Cl. 414—462 24 Claims

1. An assembly for raising and collapsing a wheelchair having collapsible legs, said assembly comprising:

first leg engagement means for reversibly engaging the proximal leg of the wheelchair and having a lowered position and a raised position;

second leg engagement means for reversibly engaging the

distal leg of the wheelchair and being operatively connected to said first leg engagement means for movement between said raised and lowered positions therewith, said second leg engagement means having a retracted and extended position relative to said first leg engagement means; and



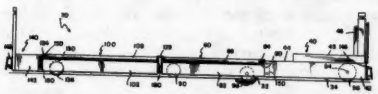
drive means for reversibly moving said first and second leg engagement means between said raised and lowered positions for raising the wheelchair and for reversibly moving said second leg engagement means from said extended position to said retracted position to reversibly collapse the distal leg of the wheelchair against the proximal leg.

4,565,483

MODULAR CONVEYOR CAR AND COUPLINGS THEREFOR

Richard L. Huelster, Indianapolis, and Thomas A. Dyer, Greenwood, both of Ind., assignors to Pentek Corporation, Indianapolis, Ind.

Filed May 20, 1982, Ser. No. 380,085
Int. Cl.[4] B65G *67/00*
U.S. Cl. 414—353 **8 Claims**



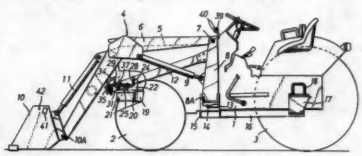
1. A powered conveyor car guided by a track along a surface comprising first, second, and third modular units, at least one of the second and third units being a modular conveyor unit, at least three wheel and axle assemblies engaging the surface to support the first, second, and third modular units, first drive means in the first modular units for moving the car, guide means for engaging the track to determine a path of movement for the car, the conveyor unit including side frame members in spaced relationship for supporting a plurality of load-carrying rollers for transporting loads in a direction generally transverse to the path of movement of the car, second drive means for propelling the load-carrying rollers to transport the loads from one lateral edge to the other lateral edge of the car, first coupling means for coupling the second modular unit to the first modular unit, and second coupling means for coupling the second modular unit to the third modular unit, whereby the modular units are separable for shipping, installation and addition of modular units, one of the first and second coupling means including a hinge connecting means having only a single generally horizontal hinge axis to permit coupled modular units to move hingedly with respect to each other so that the guide means will follow the track when the surface engaged by the wheel and axle assemblies is uneven.

4,565,484

DEVICE FOR ATTACHING FRONT WORKING IMPLEMENT TO VEHICLE BODY

Akio Hamada, Toyonaka; Motomu Masuzawa, Osaka, and Yoshiaki Matsuda, Sapporo, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Jun. 1, 1983, Ser. No. 499,838
Claims priority, application Japan, Sep. 21, 1982, 57-144116[U]
Int. Cl.[4] E02F *3/72*
U.S. Cl. 414—686 **6 Claims**



1. In an arrangement including a pair of opposed booms having a working portion at their front ends, a pair of masts supporting the booms and removably fixed to a vehicle body and a brace projecting forward from each of the masts, a device for attaching a front working implement to the vehicle body comprising a fitting portion and a bearing portion which are tapered to engage with each other approximately in a vertical direction and one of whch is attached to the vehicle body, the other portion being attached to a longitudinally intermediate portion of the brace toward its front end, an engaging portion provided adjacent the front side of the bearing portion and the fitting portion, lever means, the rearward end of having a lever plate with forward and rearward ends, said lever means the lines plate mounted on the front portion of the brace engageable with the engaging portion to hold the fitting portion and the bearing portion in fitting engagement with each other, the lever plate pivotally movably supported intermediate its ends by a pivot on the brace, the pivot being disposed away from and to the front of the engaging portion, the lever plate extending forward from the pivot, and means for fastening the lever means in a direction to fit the fitting portion into the bearing portion, the fastening means being provided at the forward end of the lever plate so that the lever plate can be fastened to the brace at a position forwardly away from the location where the fitting portion fits to the bearing portion.

6. In an arrangement including a pair of opposed booms having a working portion at their front ends, a pair of masts supporting the booms and removably fixed to a vehicle body and a brace projecting forward from each of the masts, a device for attaching a front working implement to the vehicle body comprising a fitting portion and a bearing portion which are tapered to engage with each other approximately in a vertical direction and one of which is provided on the front portion of the brace, the other portion being provided on the vehicle body, an engaging portion provided on the vehicle body, lever means mounted on the front portion of the brace at a spaced location from the fitting portion and the engaging portion and having one end engageable with the engaging portion and it other end movable to hold the fitting portion and the bearing portion in fitting engagement with each other, means for fastening the other end of the lever means in a direction to force the fitting portion into the bearing portion, said bearing portion being provided at each side of the vehicle body, and the fitting portion is provided on the front portion of the brace to fit into the bearing portion, a guide member being provided above the bearing portion and having a longitudinal guide portion for regulating the position of the fitting portion longitudinally of the vehicle body and guiding the fitting portion into the bearing portion by coming into contact with the fitting portion before it is fitted into place, the guide member further having a lateral guide portion for regulating position of

the fitting portion laterally of the vehicle body by coming into contact with the brace before the fitting.

4,565,485

MECHANICAL GRAB AND SCOOP COMBINATION

Thomas S. Wilman, Mews Cottage, 5 Horsemarket, Kirkby Lonsdale, Carnforth, England (LA6 2AS)

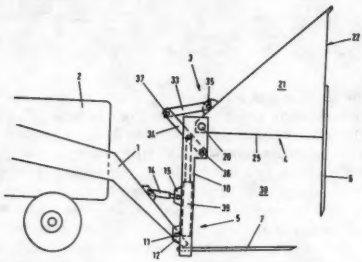
PCT No. PCT/GB83/00337, § 371 Date Aug. 15, 1984, § 102(e) Date Aug. 15, 1984, PCT Pub. No. WO84/02543, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 19, 1983, Ser. No. 642,669

Claims priority, application United Kingdom, Dec. 21, 1983, 8236338

Int. Cl.[4] E02F *3/00*

U.S. Cl. 414—704 8 Claims



1. A material handling apparatus for use on a vehicle, said apparatus being capable of acting both as a grab and as a scoop without having additional components fitted or removed, said apparatus comprising a fork member comprising a support structure, a set of tines carried by said support structure so that, in use, the tines project forwardly with respect to said vehicle, and a grab member having a further set of tines projecting therefrom, wherein:

(a) said grab member is pivotally mounted relative to the fork member so as to permit the fork and grab members to open and close thereby to bring the sets of tines carried thereby toward and away from each other so to grasp and accommodate material between them when they are at least partially together;

(b) said tines of the two sets are offset from each other laterally relative to one another so that the fork and grab members can be substantially closed, with the tines of one set fitting between the tines of the other set; and

(c) at least said grab member is provided with a fixed scoop means such that when the fork and grab members are closed a material scoop is formed, with at least a portion of said scoop means on said grab member overlying at least a portion of said set of tines on the fork member.

4,565,486

DEVICE FOR HANDLING MATERIAL

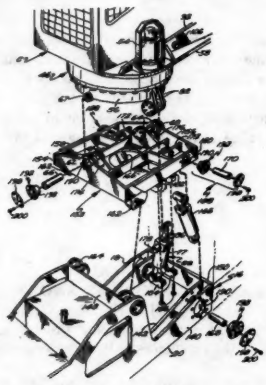
Patrick J. Crawford, and Larry G. Klement, both of Shawano, Wis., assignors to Timbco Hydraulics Inc., Shawano, Wis.

Filed Sep. 29, 1982, Ser. No. 427,090

Int. Cl.[4] B66D *3/00*

U.S. Cl. 414—729 10 Claims

1. Device for handling material comprising, in combination: a frame having a first frame axis and a second frame axis which is perpendicular to the first frame axis; a base portion; a mid-frame; means for pivotally mounting the mid-frame to the frame about a mid-frame pivot axis which is parallel to the first frame axis; means for pivoting the mid-frame about the mid-frame pivot axis; means for pivotally mounting the base portion to the mid-frame about a base portion pivot axis which is parallel to the second frame axis; means for pivoting the base portion about the base portion pivot axis, with the base portion pivoting means being of a compact design while allowing a large degree of tilt, with the base portion pivoting means comprising: at least a first hydraulic ram including a hollow cylinder having a first, open end and a second, closed end and a piston reciprocally received in the first open end of the hollow cylinder, means for pivotally mounting the free end of the piston to the base portion about a piston pivot axis generally parallel to but spaced from the base portion pivot axis, and means for pivotally mounting the cylinder to the mid-frame about a cylinder pivot axis which is perpendicular to the ram, adjacent to the first, open end of the cylinder, and parallel to the piston pivot axis and the base portion pivot axis; and means for handling material operatively attached to the base portion wherein the material handling means can be positioned relative to the material by pivoting the mid-frame about the mid-frame pivot axis by the mid-frame pivoting means and/or by pivoting the base portion about the base portion pivot axis by the base portion pivoting means; wherein the frame comprises, in combination: first and second side members, with the first and second members including an outside plate and an inside plate held in a spaced relation, with the outside and inside plates being parallel to the second frame axis, with the outside plates extending the substantial length of the device in the direction of the second frame axis, a front plate, and a rear plate, with the front and rear plates holding the first and second members in a parallel, spaced relation, with the mid-frame pivot axis being defined by first and second pivot pins secured between the inside and outside plates of the first and second side members of the frame; and wherein the inside plates include front ends and rear ends; wherein the outside plates include front ends and rear ends; wherein the front plate is attached to the front ends of the inside plates and the outside plates of the first and second side members; wherein the rear plate is attached between the outside plates of the first and second side members intermediate the front and rear ends of the outside plates; and wherein the rear plate is attached to the rear ends of the inside plates of the first and second side members.



4,565,487

SYSTEM OF ROBOTS WITH LEGS OR ARMS

Patrice Kroczynski, Vitry sur Seine, France, assignor to International Robotic Engineering, Inc., New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,791

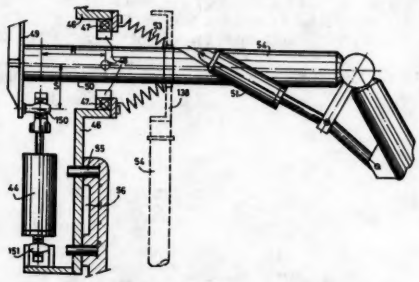
Claims priority, application France, Sep. 4, 1981, 81 16970

Int. Cl.[4] B25T *9/00*

U.S. Cl. 414—730 19 Claims

1. A robot system comprising a robot having a plurality of articulated members, actuating means for effecting movements of said articulated members, and a data processing unit for controlling said actuating means, one of said articulated mem-

bers being pivotally mounted about three separate axes intersecting at a first fixed point, said actuating means for said one articulated member comprising two jack actuators, two ball joint means for articulating said jack actuators to said one



articulated member about two points separate from and out of alignment with said first fixed point, and two other ball joint means for articulating said two jack actuators about respective second and third fixed points separate from and out of alignment with said first fixed point.

4,565,488

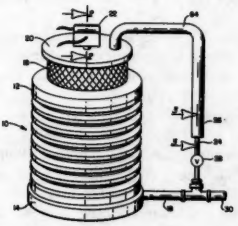
COMPRESSOR

Jack E. Muck, Garfield Heights, Ohio, assignor to AccuSpray, Inc., Bedford Heights, Ohio

Filed Oct. 21, 1983, Ser. No. 544,218

Int. Cl.[4] F01D *5/00*

U.S. Cl. 415—53 R **19 Claims**



5. An apparatus for stopping an electrically powered air compressor upon the partial blocking of an air filter adjacent the air inlet to said compressor,

said apparatus including a compressor having an inlet, an outlet and a pressure actuated switch for stopping the flow of electricity to the compressor,

an air filter mounted adjacent said inlet to filter air prior to the air entering said inlet,

said switch being in fluid communication with the compressor near the inlet and downstream of the filter,

two spaced apart electrical terminals on said switch, a bar of electrically conductive material extending across the space between the terminals to conduct electricity to said compressor, said bar being connected to a diaphragm, said diaphragm sealing the path of fluid communication between the compressor and the switch,

means biasing the bar toward the terminals and

means for locking the bar out of contact with said terminals upon the pressure actuated withdrawal of said bar from said contact by said diaphragm.

4,565,489

SELF-PRIMING CENTRIFUGAL PUMP

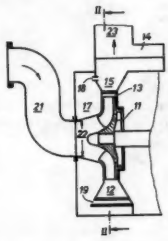
Karl Haide, Friedrichshafen, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 398,908

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141080

Int. Cl.[4] F04D *9/02*

U.S. Cl. 415—53 R **9 Claims**



3. A self-priming centrifugal pump with an arrangement for controlling mixture formation effective during a priming operation, the pump comprising pump impeller means, pump volute means beginning above and surrounding the pump impeller means for conducting liquid, venting chamber means arranged above the impeller means for receiving an air-liquid mixture from the pump volute means during the priming operation, and return-flow duct means terminating in the pump volute means at a position below the pump impeller means for connecting the venting chamber means with the pump volute means, said return-flow duct means terminating in a nozzle means, quieting chamber means operatively arranged beside the pump impeller means, pump volute means and return-flow duct means for receiving liquid directly from at least one of the venting chamber means and return-flow duct means, means for communicating the quieting chamber means with the pump volute means, said means for communicating terminating on a side of the pump volute means at a position arranged downstream of the nozzle means and being exposed to a jet from the nozzle means in the manner of an ejector, and means for communicating the quieting chamber means with the return-flow means.

4,565,490

INTEGRATED GAS/STEAM NOZZLE

Ivan G. Rice, P.O. Box 233, Spring, Tex. 77373

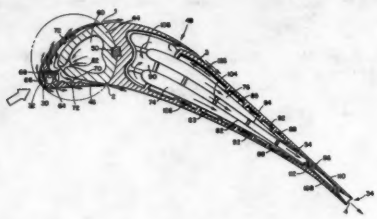
Continuation-in-part of Ser. No. 274,660, Jun. 17, 1981, Pat. No. 4,384,452, which is a division of Ser. No. 47,571, Jun. 11, 1979, Pat. No. 4,314,442, and a continuation-in-part of Ser. No. 224,496, Jan. 13, 1981, Pat. No. 4,438,625, which is a division of Ser. No. 954,832, Oct. 26, 1978, Pat. No. 4,272,953. This application Apr. 19, 1983, Ser. No. 486,336

Int. Cl.[4] F02C *7/16*

U.S. Cl. 415—114 **1 Claim**

1. An integrated gas and steam nozzle for directing a combustion gas stream onto rotatable blades for the extraction of work, said gas nozzle comprising a plurality of spaced air foil-shaped vanes, said vanes having a leading edge portion and a trailing edge portion proximate to said blades, a source of steam, a vane body steam nozzle located on the suction side surface of said vanes at approximately the mid point between said leading and trailing edges of said vanes, means to supply steam from said source to said vane body steam nozzle, said

vane body steam nozzle capable of directing steam across the exterior suction side surface of said vanes toward said trailing



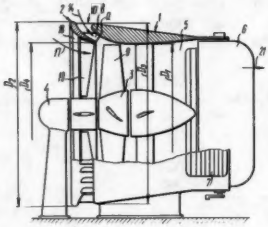
edge, said suction side surface between said vane body nozzle and said trailing edge containing substantially no curvature.

4,565,491

PROPULSION INSTALLATION OF AIR-CUSHION TRANSPORT VEHICLE

Sergei K. Ivanov; Viktor E. Dudkin; Iosif A. Raskin, and Valery P. Peredery, all of Donetsk, U.S.S.R., assignors to Donetsky Nauchno-Issledovatelsky Institut Komplexnoi Mekhanizatsii Shakht, Moscow, U.S.S.R.

Filed Jul. 28, 1980, Ser. No. 173,163
Claims priority, application U.S.S.R., Sep. 10, 1979, 2804005
Int. Cl.[4] F01D *1/04*
U.S. Cl. 415—160 **5 Claims**



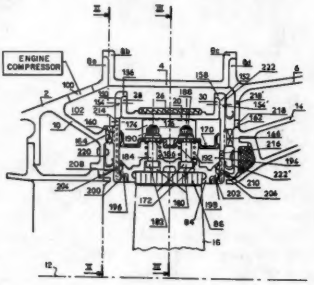
1. A propulsion installation of an air-cushion transport vehicle, comprising: an annular duct; an axial fan with working blades installed in said annular duct which provides an area of elevated pressure in said annular duct at the discharge side of said axial fan; a ring slat disposed before said annular duct; an annular passage formed between said annular duct and said ring slat, with the exit of said annular passage being located ahead of said working blades and adjacent the peripheral portions thereof, and the inlet of said annular passage being outside the area of elevated pressure at the discharge side of said axial fan; a vane cascade positioned in said annular passage and made up of curved vanes, a concave portion of each one of which is directed toward a pressure side of the peripheral portions of said working blades, said vanes being oriented to impart a spin, in a direction opposite the direction of rotation of said working blades, to the air flow entering said annular passage.

4,565,492

SEALING DEVICE FOR TURBINE BLADES OF A TURBOJET ENGINE

Jacques R. Bart, Evry; Gérard E. A. Jourdain, Saintry-sur-Seine, and Daniel Rambach, Paris, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." , Paris, France

Filed Jul. 6, 1984, Ser. No. 628,311
Claims priority, application France, Jul. 7, 1983, 83 11646
Int. Cl.[4] F01D *11/08*
U.S. Cl. 415—175 **15 Claims**



1. In a turbojet engine having a compressor, an outer casing having a longitudinal axis and at least one turbine wheel rotatably mounted within the casing, the turbine wheel having a plurality of turbine blades attached thereto, an improved device for effecting a seal between the turbine blade tips and the outer casing during transitory and stabilized engine operating modes, comprising:

(a). a plurality of first sector hook elements attached to the outer casing at a position upstream of the turbine blades so as to be movable in a radial direction with respect to the outer casing;

(b). a plurality of second sector hook elements attached to the outer casing at a position downstream of the turbine blades so as to be movable in a radial direction with respect to the outer casing;

(c). a one piece outer ring having an upstream end attached to the first sector hook elements and a downstream end attached to the second sector hook elements;

(d). a one piece inner ring disposed between the first and second sector hook elements and located radially inwardly with respect to the outer ring, the inner ring having a greater coefficient of thermal expansion than the outer ring;

(e). at least three resilient first connecting members each connected to the outer ring and the inner ring and extending in a generally circumferential direction;

(f). a plurality of packing segments disposed bewteen the first and second sector hook elements, an inner sealing surface of the packing segments disposed in close proximity to the tips of the blades;

(g). connecting means to connect each of the packing segments to the inner ring;

(h). labyrinth seal means associated with an upstream and downstream edge of each packing segment to form a labyrinth seal in conjunction with the first and second sector hook elements; and,

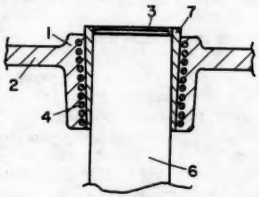
(i). means to direct air from a stage of the compressor onto the outer and inner rings such that thermal expansion/-contractor of the outer and inner rings moves the packing segments radially outwardly/inwardly corresponding to the expansion/contraction of the turbine blade tips so as to maintain clearance bewteen the blade tips of the packing segments and to prevent excess air leakage therebetween.

4,565,493

HUB FOR FANS, WHEELS AND THE LIKE

Stig L. Hallerbäck, Västra Frölunda, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Continuation of Ser. No. 477,088, Mar. 21, 1983, abandoned. This application Aug. 22, 1984, Ser. No. 643,046
Claims priority, application Sweden, Mar. 31, 1982, 8202045
Int. Cl.[4] F04D *29/60*; F16D *1/06*
U.S. Cl. 416—204 R 5 Claims



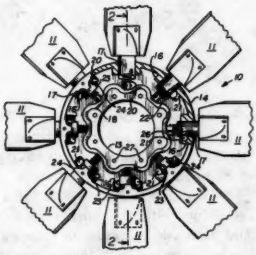
1. A hub assembly for mounting fans, wheels and the like on a shaft member (6) comprising a hub portion made of a flexible resilient material, such as plastics, having a bore (3) for the shaft and a prestressed reinforcing coil (4), preferably of a material having similar expansion properties as that of shaft (6) embedded essentially completely within the hub portion adjacent the bore (3) of the hub somewhat inside the bore surface whereby the different windings of the coil are somewhat spaced apart, and wherein the coil is so strong that at temperature variations it urges the material to follow the thermal dimension variations of the coil, thereby maintaining a firm grip between the bore surface and the shaft (6).

4,565,494

FAN BLADE SUPPORT RING

Nelson E. Dinger, Erie, Pa., assignor to Huber Reversible Fan, Inc., Erie, Pa.

Filed Nov. 5, 1984, Ser. No. 668,100
Int. Cl.[4] F04D *29/36*
U.S. Cl. 416—206 4 Claims



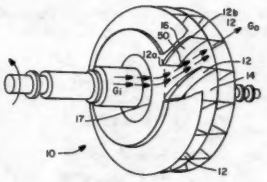
1. A fan, having an outer ring having a circumferentially spaced radially extending holes,
blades, each having a stem on one end thereof,
one said stem extending through each of said holes,
an inner ring,
springs, each having an outer end and and inner end,
circumferentially spaced fan support means on said outer ring to support said fan on an engine,
said inner ring having a plurality of symmetrically spaced outwardly curving parts,
a spring support portion joining each said outwardly curved part and spaced inwardly from said outwardly curving part,
said inner end of each said spring resting on each said spring supporting portion of said inner ring and its outer end engaging a said stem urging said blade attached to said stem outwardly,
means on said inner end of each said stem limiting the outward movement of said stem and means to retain said stem in a predetermined positions of rotation.

4,565,495

ARMORING SYSTEM FOR AN AIRFOIL CENTRIFUGAL FAN

Donald R. MacLeod, Jr., Hingham, Mass., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 11, 1983, Ser. No. 522,639
Int. Cl.[4] F04D *29/30*
U.S. Cl. 416—224 16 Claims



1. An armoring system for use with an airfoil centrifugal fan for preventing erosion of the airfoil blades of the fan wherein the upper and lower surfaces of each blade define an interior, void space therebetween, comprising:
an armor shield adapted to be releasably secured to the exterior of each blade about at least a portion of the upper surface thereof for preventing erosion of said portion of the blade;
a plurality of support columns adapted to be spaced about the interior, void space formed by the upper and lower surfaces of the blade in the region of the blade to which said armor shield is adapted to be releasably secured, said support columns to be affixed at their respective ends to the upper and lower surfaces of the blade to structurally reinforce the blade;
a threaded member adapted to extend through respective holes in said armor shield and said portion of the blade to which said armor shield is to be releasably secured and into an opening formed in a respective one of said support columns for releasably securing said armor shield to said portion of the blade, said threaded member not extending beyond the upper and lower surfaces of the blade;
means for reducing side loading on said threaded member due to an axial or radial offset between said respective holes in said armor shield and said portion of the blade; and
means for disengagably engaging said threaded member to secure said threaded member in said support column to releasably secure said armor shield to said portion of the blade.

4,565,496

OIL WELL PUMP SYSTEM AND METHOD

Paul B. Soderberg, 1716 Huge Oaks, Houston, Tex. 77055

Continuation of Ser. No. 308,847, Nov. 19, 1981, Pat. No. 4,490,095. This application Dec. 17, 1984, Ser. No. 682,888
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.[4] F04B *47/08*
U.S. Cl. 417—46 12 Claims

1. A system for pumping liquid from a well, the well being capable of producing both gas and liquid, comprising:
a casing mounted within a well bore;
a string of tubing mounted within the casing;
a pump sealably mounted within the tubing so as to allow for

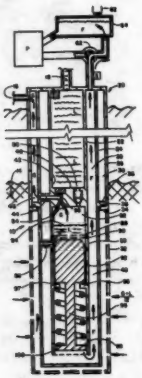
reciprocation of the pump member in a pump chamber, the power stroke of said pump member actuated only when said pump chamber is substantially void of gas and vapor;

a spring member mounted with the pump member so as to return the pump member from a pumping stroke;

a source of fluid pressure at the surface;

a conduit having one end connected with the tubing below the pump member, a second end of the conduit being connected with said source of fluid pressure at the surface such that fluid pressure at the surface is alternately injected into and released from the conduit so as to cause power strokes of the pump member alternately with return strokes caused by the spring member;

a first check valve mounted through the wall of said pump chamber above the pump member so as to allow fluid produced by the well to enter said pump chamber between the uppermost and lowermost positions of the top of the pump member;



a second check valve mounted between said pump chamber and said tubing immediately above the uppermost position of the top of the pump member such that fluid from the well will intermittently flow into the pump chamber through the first check valve and be pumped upwardly through the second check valve and the production tubing to the surface, upon operation of the pump member;

a gas passage for communicating gas and vapor from said pump chamber to the surface;

a vent valve mounted substantially at the same level as said second check valve such that gas and vapor from said pump chamber are vented to the surface through said vent valve and said gas passage;

means for detecting when said chamber is substantially void of gas and vapor; and

means for causing said fluid pressure source at the surface first to increase fluid pressure and then to release fluid pressure in the conduit so as to cause one complete pump and return cycle of said pump member.

4,565,497

PUMP ACTUATOR

Phillip J. Miller, Berkeley, and Jal S. Jassawalla, San Francisco, both of Calif., assignors to Novacor Medical Corporation, Oakland, Calif.

Continuation of Ser. No. 446,454, Dec. 3, 1982, abandoned. This application Dec. 11, 1984, Ser. No. 680,731

Int. Cl.[4] **F04B** *21/00, 43/00;* **H02K** *33/14;* **A61F** *1/00*

U.S. Cl. 417—63 **7 Claims**

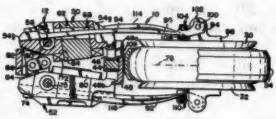
1. In a pump having a flexible enclosure defining a pump chamber, and a pair of opposed substantially axially aligned pusher elements engaged with opposed movable walls in the enclosure for movement between first relatively more spaced positions and second relatively less spaced positions to expel fluid from the enclosure, an actuator for producing coordinated movement of the pusher elements between their first and second positions, comprising:

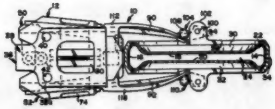
a frame,

a pair of armatures, each having front and back end regions, and mounted on said frame for movement between open relatively more spaced and closed relatively less spaced positions, substantially in the direction of movement of the elements toward and away from each other, and with the armatures' front end regions being disposed adjacent the enclosure,

a solenoid core in each armature, said solenoid cores being energizeable to cause said armatures to move from their open positions to their closed positions,

a pair of opposed, elongate main springs, each attached at one spring end to an associated armature and being attached at its other spring end to an associated pusher element, said main springs being arranged on opposite sides of the flexible enclosure and having their longitudinal axes substantially coplanar with the axes of the pusher elements, said main springs further being arranged within the outermost dimension of said armatures in the direction of the axes of the pusher elements, and





elongate preload means associated with each of said main springs, each of said preload means having one end connected to the associated armature and having its other end arranged for operative engagement with the associated main spring for holding said main spring in a relatively less stressed condition with the pusher element in its first position, and with said armature in its open position,

said armatures being movable to their closed positions with the pusher elements still in their first positions to disengage said preload means from said associated main springs and bend the main springs to relatively more stressed second conditions, whereby in relieving the increased stress in said main springs, said other ends of said main springs are displaced to move the pusher elements coordinately toward their second, relatively less spaced positions,

said solenoid cores each having a front-to-back slot therein with a respective one of said main springs extending through said slot, said slots each being of a size sufficient to provide clearance between each of said cores and the associated one of said main springs for all said operative positions of said armature and all said operative conditions of said spring.

4,565,498

ROTARY GAS COMPRESSOR

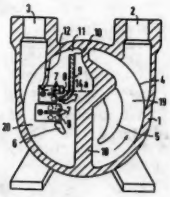
Norbert Schmid, and Siegfried Schönwald, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 629,037

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337837

Int. Cl.[4] F04C *19/00*

U.S. Cl. 417—68 2 Claims



1. A rotary liquid ring type gas compressor comprising:

an impeller housing; an impeller rotatably mounted in the housing; a housing cover; a control disc arranged between the housing and the cover; a suction intake; a pressure outlet; a suction slot arranged in the control disc to provide communication between the suction intake and the impeller; a pressure slot arranged in the control disc to provide communication between the impeller and the pressure outlet; an additional aperture arranged in the control disc adjacent to the pressure slot; a recess on the housing cover to define, in use, a gas pocket which is above the liquid level; and a pipe for supplying ballast gas to the compressor, said pipe communicating at one end with the additional aperture and the opposite end of the pipe opening into said recess at a position which in use is above the liquid level.

4,565,499

EJECTOR

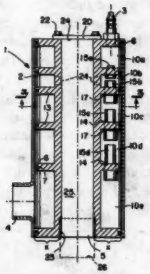
Dan Greenberg, 4 Rehov Haganim, Kiryat Bialik, Israel

Filed Apr. 20, 1984, Ser. No. 602,374

Claims priority, application Israel, Nov. 15, 1983, 70239

Int. Cl.[4] F04F *5/00*

U.S. Cl. 417—174 12 Claims



1. An ejector device comprising a number of suction chambers which are interconnected by ejector nozzles characterised thereby that the assembly of suction chambers constitutes a cylinder the wall of which is of considerable thickness around a central empty space, and which wall is subdivided into ring shaped chambers by partitions extending across the axis of the cylinder, the said ring shaped chambers constituting the suction chambers, an inlet opening for a pressure medium being provided and leading into that one of the suction chambers which is at one end of the cylinder, several ejector nozzles being positioned co-axially one after the other in the successive suction chambers, one of said chambers being provided with an outlet for the pressure medium while another of said chambers is connected with the inner space of the cylinder, there being further provided apertures in the said partitions, such apertures being covered on one side of the partition by flaps, so as to permit passage of air from one suction chamber into the next one in one direction only, and said flaps extending across said nozzles and being held in position by the bodies of said nozzles.

4,565,500

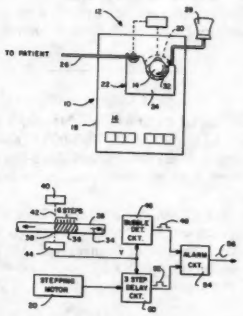
AIR BUBBLE DETECTING AND DISCRIMINATING CIRCUIT ARRANGEMENT AND METHOD

Thipthep Jeensalute, and Somkiat Chakkaw, both of Van Nuys, Calif., assignors to Stewart-Riess Laboratories, Inc., Tarzana, Calif.

Filed Feb. 24, 1983, Ser. No. 469,412

Int. Cl.[4] F04B *21/00, 43/12;* A61M *5/00;* G08B *21/00*

U.S. Cl. 417—53 8 Claims



1. A peristaltic infusion pump, assembly, comprising:

(a) means including a continuous length of tubing adapted for connection at one end to a supply of fluid and at its opposite end to a patient;

(b) means including a variable speed motor acting on said tubing for peristaltically pumping said fluid therethrough at a flow rate proportionate to the speed of said motor, whereby any air bubbles in said fluid will move with the latter at the same flow rate;

(c) means for detecting the presence of said air bubbles, if any, as they pass through a fixed point along the path of movement through said tubing, said detecting means being capable of producing a first signal in response to the presence of an air bubble at said fixed point and for the duration that the detected bubble passes through said point, the length of said first signal corresponding to the length of the detected bubble; and

(d) means including said motor responsive to said detecting means for distinguishing between detected bubbles of at least a predetermined size which can cause problems from smaller nuisance bubbles which do not, regradless of the flow rate of the fluid, said distinguishing means including means for producing an alarm signal only if problem bubbles are detected, said distinguishing means being capable of producing a second signal for a predetermined period of time after initiation of said first signal, said second period of time being inversely proportionate to the speed of said motor, and said distinguishing means being capable of producing said alarm signal only during the presence of both said first and second signals, said time delay distinguishing between the larger problem bubbles and the smaller nuisance bubbles regardless of the flow rate of the fluid and bubbles.

8. A method of detecting air bubbles of at least a predeter-

mined size from smaller bubbles in a peristaltic infusion pump or like apparatus in which a liquid is caused to flow in a continuous stream through a tube by means of a motor such that the flow rate of said fluid is directly proportionate to the speed of said motor, said method comprising the steps of:

(a) detecting the presence of said air bubbles, if any, as they pass through a fixed point along their path of movement through said tubing and producing a first signal as soon as an air bubble is detected at said point and for the duration that the detected bubble passes through said point whereby the length of said first signal corresponds to the length of the detected bubble;

(b) using said motor as a clock, producing a second signal a predetermined period of time after initiation of said first signal and for the duration of the latter, said period of time being inversely proportionate to the speed of said motor and therefore inversely proportionate to the flow rate of said fluid; and

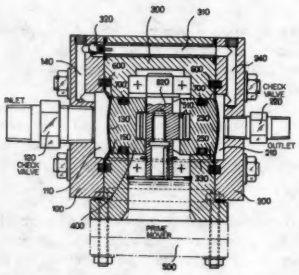
(c) producing an alarm signal in response to the simultaneous presence of said first and second signals, whereby said delay in the production of said second signal after production of said first signal distinguished between larger problem air bubbles and smaller nuisance air bubbles, regardless of the flow rate of fluid and bubbles through said tubing.

4,565,501

TWO-STAGE VOLUMETRIC PUMP FOR LIQUEFIED PETROLEUM GASES IN LIQUID PHASE

Gilles H. Y. Laurendeau, Rouen, and Jean-Bernard G. H. Leprince, Louviers, both of France, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 487,394, Apr. 21, 1983, abandoned.
This application Sep. 21, 1984, Ser. No. 654,032
Claims priority, application France, Apr. 21, 1982, 82 06867
Int. Cl.[4] F04B *25/04, 11/00*
U.S. Cl. 417—267 **3 Claims**



1. A positive displacement pump having at least two stages for pumping liquefied petroleum gases in substantially a liquid form, said pump comprising:

a housing;

at least two separate chambers formed in said housing, each chamber have one wall that is formed by a diaphragm, said diaphragm being freely deformable in a direction to increase the volume of each chamber and deformable in the opposite direction under the action of actuating means;

a passageway connecting said chambers, said passageway having a non-return valve positioned therein for allowing flow from a first one of said chambers to the other of said chambers while preventing flow from the other chamber to the first chamber;

an inlet means for said first one of said chambers, said inlet means having a non-return valve positioned therein to allow fluid to flow into said first one of said chambers;

an outlet means for said other of said chambers, said outlet means having a non-return valve positioned therein to allow fluid to flow out of said other chamber of said chambers;

a double ended piston disposed in said housing, each end of said piston contacting one of said diaphragms, said piston being sealed in said housing to isolate said chambers from the outside;

a driving means coupled to said piston to reciprocate said piston; and

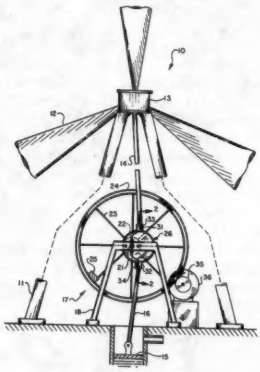
a passageway disposed to connect the spaces on the side of said diaphragm opposite said pump chambers to equalize the pressures in said spaces.

4,565,502

COUNTERBALANCE WHEEL FOR A WIND MACHINE

Otto Sell, 2201 E. Ash, Deming, N. Mex. 88030

Filed Mar. 6, 1985, Ser. No. 708,987
Int. Cl.[4] F04B *17/02*
U.S. Cl. 417—334 **10 Claims**



1. In combination with a wind-driven apparatus having a driving reciprocating shaft adapted to drive a reciprocatory load, a counterbalancing means for the shaft and load, comprising a frame, an axle journaled in the frame transversely of the reciprocating shaft, coupling means between the shaft and the load, the coupling means having an inner portion, an outer portion, and a rotary bearing means therebetween, the inner portion having an opening formed therein, eccentrically thereof, for receiving the axle, means for pivotably mounting the outer portion of the coupling means to the driving shaft and to the load, respectively, at substantially opposite positions on the outer portion of the coupling means, a wheel carried by the axle and having a hub disposed laterally of the coupling means, means for securing the wheel hub to the inner portion of the coupling means, and means on the wheel for counterbalancing the reciprocating shaft and load.

4,565,503

DEVICE FOR COOLING MOTOR END-TURNS IN A COMPRESSOR

Kennard L. Wise, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

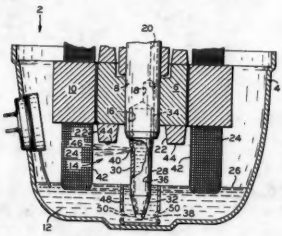
Continuation of Ser. No. 433,824, Oct. 12, 1982, abandoned.
This application Feb. 28, 1985, Ser. No. 706,596
Int. Cl.[4] F04B *39/02;* **H02K** *9/00;* **F01M** *1/06*
U.S. Cl. 417—372 **6 Claims**

1. In a hermetic motor-compressor unit including an outer housing having a lubricant sump in the bottom thereof, a rotatable crankshaft vertically disposed in said housing, and a motor having a stator circumferentially disposed about said rotating

crankshaft and a rotor connected to said rotating crankshaft for rotation thereof, a cooling device comprising:

a centrifugal lubricant pick-up tube having one end directly attached to said rotating crankshaft for rotation therewith and its opposite end extending vertically into said lubricant sump, said pick-up tube including an axial bore extending upwardly therein from said opposite end and a pump means for pumping lubricant upwardly from said sump,

said stator having lower end turns extending downwardly in



said outer housing, said lower end turns having their radially inner surfaces in radially adjacent and spaced-apart relationship with said pick-up tube,

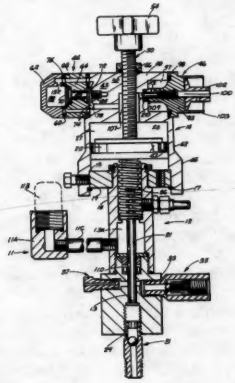
said pick-up tube having a radial passage means therein in communication with said axial bore and in direct facing relationship with said stator lower end turns for throwing a portion of lubricant pumped upwardly through said axial bore radially outwardly therethrough and directly against said radially inner surfaces of said lower end turns for the cooling thereof prior to contacting any other portions of said motor.

4,565,504

PNEUMATIC METERING PUMP APPARATUS

Albert A. George, P.O. Box 3604, Lafayette, La. 70502, and David B. George, 304 Upland Dr., Layfayette, La. 70506

Filed Oct. 20, 1983, Ser. No. 543,531
Int. Cl.⁴ F04B *9/12*
U.S. Cl. 417—401 **8 Claims**



1. A pneumatic metering pump apparatus, comprising:

a. pump means;

b. power head means further comprising a pneumatically driven piston housed in a cylinder cooperating with said pump means, said piston moveable between first and second positions

c. a fluid inlet providing fluid flow to said power head means;

d. valving means on said power head means, including a valving element moveable to a sealing position by said fluid flow and providing fluid communication to said piston when said valving element is in said sealing position, said fluid moving said piston to a second position; and

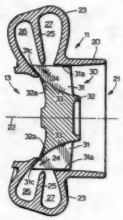
e. means, acted on by said fluid when said piston is in said second position, unseating said valving element, allowing fluid flow to escape said piston cylinder and allowing said piston to return to said first position.

4,565,505

COMBINATION FLOW TURBINE FOR INTERNAL COMBUSTION ENGINE TURBOCHARGERS

William E. Woollenweber, 3905 Cove Rd., Columbus, Ind. 47203

Filed Apr. 11, 1983, Ser. No. 483,600
Int. Cl.⁴ F04B *17/00, 35/00*
U.S. Cl. 417—407 **10 Claims**



1. In a turbine for a turbocharger for an internal combustion engine including a turbine wheel having a central core and a plurality of outwardly extending blades, said turbine wheel being rotatable about a central axis, means forming a meridionally divided volute for exhaust gas surrounding the turbine wheel and defining a turbine wheel opening permitting exhaust gas from said volute to act on the outwardly extending blades of the turbine wheel, the improvement wherein said means forming a meridionally divided volute at its turbine wheel opening includes means for directing exhaust gas from one side thereof into the turbine wheel in a direction generally axially into the turbine wheel and from the other side thereof in a direction generally radially into the turbine wheel.

4,565,506

HAND OPERATED VACUUM PUMP

Danny L. Williams, Clarinda, Iowa, assignor to Lisle Corporation, Clarinda, Iowa

Filed Mar. 13, 1984, Ser. No. 589,140
Int. Cl.⁴ F04B *23/00, 21/04;* **F01B** *29/00*
U.S. Cl. 417—440 **6 Claims**

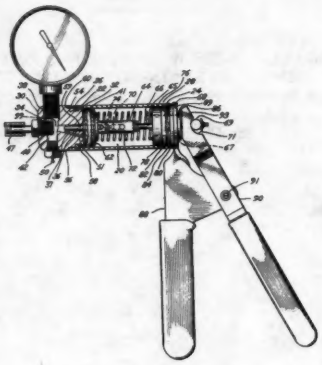
1. A hand-operated vacuum pump comprising, in combination:

a cylinder having a throughbore and defining a first inner circumferential cylinder groove at least at one end thereof;

a head assembly defining a vacuum cavity and a fluid flow passage therein, said head assembly including a cylinder-engaging head section having a shape and dimensions substantially congruent with said one end of said cylinder, said cylinder-engaging section defining an outer circumferential head groove, said first inner circumferential cylinder groove and said outer circumferential head groove being in an opposed relation in an assembly state, said head assembly including a flapper check valve in communication with said fluid flow passage for permitting

substantially unidirectional flow through said fluid flow passage from said vacuum cavity, said flapper check valve including a flexible disc against a face of said head section and over said fluid flow passage and a stem attached to said flexible disc, said stem being attached to said cylinder-engaging head section to hold said flexible disc in position to function as a valve, said head assembly further including a connector in communication with said vacuum cavity and a release valve in communication with said vacuum cavity;

a first elastic seal member positioned within said first inner circumferential cylinder groove and said outer circumferential head groove in said assembled state to retain said



head assembly in sealed and mechanically fixed relation to said cylinder;

a piston assembly operative within said cylinder to draw a vacuum in said vacuum cavity; and

manual drive means, attached to said cylinder and said piston assembly, for actuating said piston assembly,

said piston assembly including a piston slidable within said cylinder, a piston driving rod, and a piston guide, said piston driving rod interconnecting said piston and said manual drive means through said piston guide, said piston including a piston fluid passage, said piston assembly further including a piston valve within said piston fluid passage for permitting substantially unidirectional flow through said piston fluid passage.

4,565,507

RECIPROCATING COMPRESSOR FOR GASEOUS MEDIA

Reimer Reimers, Haltern, Fed. Rep. of Germany, assignor to Flottmann-Werke GmbH, Herne, Fed. Rep. of Germany

Filed Sep. 17, 1984, Ser. No. 650,892

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1983, 3333468

Int. Cl.[4] F04B *21/02, 39/10*

U.S. Cl. 417—564 **8 Claims**

1. A reciprocating compressor for gaseous media, said compressor including the combination of:

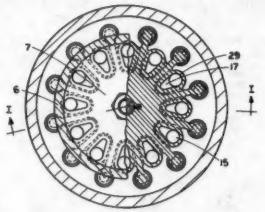
a cylinder having a piston therein for reciprocating along a central axis of said cylinder

a cylinder head,

an apertured valve disc secured between said cylinder and said cylinder head, said disc having intake and delivery valve orifices angularly spaced equally about inner and outer concentric circles centered at said central axis, the orifices spaced about the outer circle being offset by half the angular spacing between the orifices spaced about the inner circle,

an enhaust valve strip comprising a discoidal center area connected by radial arms extending outwardly therefrom to enlarged end portions disposed between said cylinder and said disc to only one of said delivery valve orifices,

an intake valve strip comprising a discoidal center area connected by radial arms extending outwardly therefrom to enlarged end portions disposed between said cylinder head and said disc to only one of said intake valve orifices,



the radial arms of one of said exhaust valve strip and intake valve strip having a width to extend between said orifices spaced about said inner circle,

stroke limiter means for said intake and exhaust valve strips, and

means for securing said stroke limiter means and said exhaust and intake strips to said disc.

4,565,508

DEVICE FOR CONTROLLING THE VOLUMETRIC CAPACITY OF A SCREW COMPRESSOR

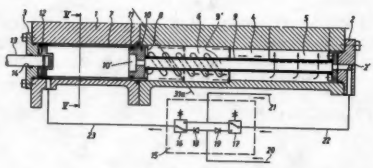
Paul Lindström, Norrköping, Sweden, assignor to Stal Refrigeration AB, Norrköping, Sweden

Filed Oct. 23, 1984, Ser. No. 663,931

Claims priority, application Sweden, Oct. 24, 1983, 8305827

Int. Cl.[4] F01C *1/16*

U.S. Cl. 418—201 **5 Claims**



1. In a screw compressor which includes a housing that defines an elongated compression chamber, a cylindrical bore which extends in parallel with said elongated compression chamber, said cylindrical bore having a first end and a second end, a low-pressure port which extends from said cylindrical bore near said first end thereof to said compression chamber, and a plurality of high-pressure ports which extend from said cylindrical bore between said low-pressure port and the second end thereof to said compression chamber; a low-pressure cover which covers the first end of said cylindrical bore; a high-pressure cover which covers the second end of said cylindrical bore; two interengaging rotors located in said elongated compression chamber; and a plunger which is slidingly positioned within said cylindrical bore and, depending on its location within said cylindrical bore, is capable of closing a varying number of said high pressure ports, the improvement wherein

said plunger includes a hollow cylindrical mantle which seals against said cylindrical bore and is slidingly movable therealong, said mantle having an open first end which faces the first end of said cylindrical bore and a second end which faces the second end of said cylindrical bore; and a closed end wall which sealingly encloses the second end of said mantle, said closed end wall having an inner side which faces the first end of said cylindrical bore and an

outer side which faces the second end of said cylindrical bore,

a hollow rod stationarily mounted on said low-pressure cover to extend along said cylindrical bore toward said high-pressure cover, said hollow rod having a free end located between said plurality of high-pressure ports and said high-pressure cover,

a piston attached to the free end of said hollow rod, said piston being sealingly slidable within the mantle of said plunger, said piston having a channel therethrough which communicates between the interior of said hollow rod and the interior of said mantle,

said low-pressure cover includes a channel therethrough which communicates with the interior of said hollow rod and, together with the interior of said hollow rod and the channel in said piston, enables control fluid to pass into and out of the mantle of said plunger, and

a duct which communicates with said cylindrical bore to enable control fluid to pass into and out of the cylindrical bore between the high-pressure cover at the second end thereof and the closed end wall of said plunger, the relative pressures of the control fluid acting against the inner and outer sides of the closed end wall of said plunger determining the location of said plunger along said cylindrical bore and thus the number of high-pressure ports closed by the mantle thereof.

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CONTINUOUS OPERATION PRESS

Albert De Mets, Roeselaare, Belgium, assignor to Constructiewerkhuizen De Mets N.V., Izegem/Kachtem, Belgium

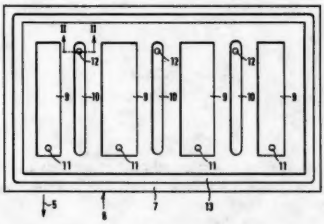
Filed Jun. 15, 1984, Ser. No. 621,044

Claims priority, application European Pat. Off., Jun. 16, 1983, 83105939.9

The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.

Int. Cl.⁴ B30B *5/06*

U.S. Cl. 425—101 **32 Claims**



1. In a continuous operation press for the manufacture and treating of a board web of prefabricated or raw material, particularly of a non-woven material treated with binding means and containing lignol-cellulose or cellulose-containing particles, such as wood chips and wood fibers, the board web is passed into an inlet region of a lower endless steel belt and an upper endless steel belt, which travel at a predetermined velocity in a transport direction, wherein there is provided a smooth coating formed with grooves serving as a sliding surface located at least in the main press region and the calibration region disposed downstream therefrom, the smooth coating is supported on a lower countersupport and on an upper countersupport, the board web gliding above the smooth coating with the aid of fluid lubricant which may serve as a heat transfer medium, the supply of said fluid lubricant being under pressure, the lubricant being supplied to the smooth coating through supply conduits and supply openings and discharged therefrom through discharge openings and discharge conduits, the lubricant being recirculated and optionally heated or cooled, the improvement comprising: each groove in the smooth coating being formed with one opening therein for the lubricant supply and lubricant discharge, each groove having a lubricant supply opening being positioned adjacent a groove having a lubricant discharge opening, and means are provided for controlling the pressure in at least some of said grooves for generation of a counter-pressure.

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DOUBLE EXTRUDER FOR THE PRODUCTION OF A TWO-LAYER TUBULAR EXTRUDED PRODUCT

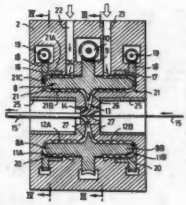
Kari J. Kirjavainen, Helsinki, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed Jan. 24, 1985, Ser. No. 694,207

Claims priority, application Finland, Feb. 24, 1984, 840759

Int. Cl.⁴ B29C *39/14, 47/06, 47/10, 47/46*

U.S. Cl. 425—113 **10 Claims**



1. A double extruder for plastic materials for the production of a two-layer tubular extruded product, which extruder comprises

a frame (2),

a cylindrical treating screw (8) rotatably mounted in a housing provided in said frame, said screw forming a ring-shaped treating space (21) between the frame and the screw,

inlet channels(22, 23) provided in the frame and extending to the periphery of the screw for supplying materials to be extruded into said treating space,

an outlet channel (13) provided in the frame and extending to the periphery of the screw for discharging the materials to be extruded from the treating space, and

extrusion means (14) mounted in the frame in communication with said outlet channel, characterized in that

the treating screw (8) is tubular and forms with the frame (2) two separate treating spaces (21), each space extending from the outer periphery of the treating screw around the end edge to the inner periphery of said treating screw, and

that the outlet channel (13) is ring-shaped and joins radially the inner periphery of the treating screw (8).

4,565,511

APPARATUS FOR PRODUCING ARTICLES FROM TWO OR MORE FLOWABLE SYNTHETIC RESIN REACTANTS

Heinrich Ramisch, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 19, 1984, Ser. No. 590,781

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3309964

Int. Cl.⁴ B29B *1/06*

U.S. Cl. 425—146 **9 Claims**

1. An apparatus for producing molded articles from a mixture of two flowable reactive synthetic resin components, said apparatus comprising:

respective supply vessels for each of said components;

a mixing head for receiving said components, mixing same and discharging a mixture of said components into a mold;

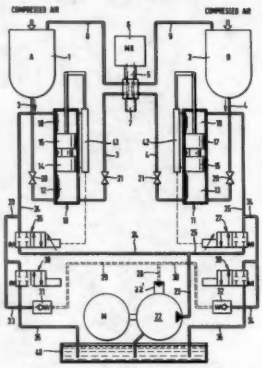
a metering unit connected between each of said vessels and said mixing head, said metering unit comprising a metering piston for displacing the respective component and a

working piston connected to the respective metering piston for displacing same, each of said units having a working compartment to which a pressure medium can be fed to displace the respective working piston;

a single variable displacement pump common to both of said units and provided with a hydraulic operator for varying the displacement of said pump as a function of a control pressure, said pump having a pressure line;

respective volume control valves connected between said pressure line and said working compartments;

a respective servocontroller connected between each of said working pistons and the respective volume control valve for operating same in accordance with the velocity of the



respective working piston to maintain said velocity constant during a displacement stroke wherein the respective component is displaced by the respective unit to said mixing head for mixing therein with the other component; and

hydraulic lines including respective check valves communicating with the respective working compartments and with said operator for actuating said operator with the higher of the pressures applied to said working compartments, said mixing head comprising a plunger displaceable between a position wherein a mixing chamber is freed to enable mixing of said components and a position wherein each of said components is recycled to the respective vessel.

4,565,512

RAM EXTRUDERS

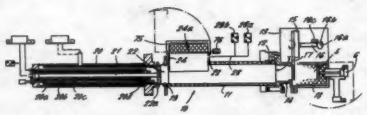
Peter R. Wills, Somersham, and Richard C. Cowley, Ely, both of England, assignors to Barwell Machine and Rubber Group Limited, United Kingdom

Filed May 18, 1984, Ser. No. 611,747

Claims priority, application United Kingdom, May 23, 1983, 8314218

Int. Cl.⁴ B28B *17/00*

U.S. Cl. 425—190 **14 Claims**



1. A ram extruder, comprising:

an extruder barrel to receive material to be extruded, said extruder barrel having a first and a second end,

an extrusion aperture at said first end of the barrel,

a loading port located towards said second end of the barrel,

a piston slidably received by the barrel,

drive means to advance the piston from a retracted position located beyond the loading port approximate said second end of the barrel to advance the piston along said barrel towards said first end to extrude material in the barrel through the extrusion aperture and to return the piston to the retracted position at the end of the extrusion operation,

means to close the loading port in the barrel,

means to evacuate air from the barrel through the closing means prior to the advancing of the piston past the loading port for an extrusion operation, and

a vacuum passageway in said piston through which air is extracted from the barrel from in front of the piston as the piston advances along the barrel.

4,565,513

APPARATUS FOR SHAPING AND CUTTING A THIN THERMOPLASTIC SHEET TO MAKE ARTICLES AND FOR STACKING THE ARTICLES

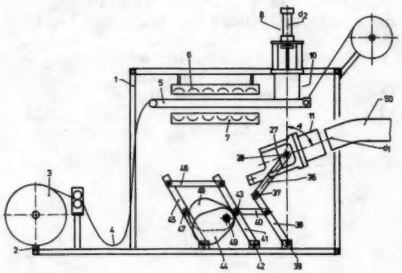
Günther Kiefer, Schwaigern, Fed. Rep. of Germany, assignor to Adolf Illig Maschinenbau GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed May 29, 1984, Ser. No. 614,782

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319473; Dec. 23, 1983, 3346628

Int. Cl.⁴ B29C *17/03, 17/10*

U.S. Cl. 425—289 **6 Claims**



1. In apparatus for shaping and cutting articles from a thermoplastic sheet and for stacking the articles in a stacking chute, the improvement comprising:

transporting means for advancing the sheet through said apparatus;

heating means for heating the sheet as the sheet advances through said apparatus;

a table for supporting a cutting and shaping means located downstream of said heating means in the direction of advance of the sheet and which is movable between a first position for shaping and cutting the articles and a second position for stacking the articles;

a bearing pin operatively associated with said table so that said table can be displaced by and pivoted about said bearing pin;

first guide means mounted for being displaced perpendicular to the direction of advance of the sheet, said bearing pin being seated in said first guide means;

a bell crank drive connected to said table via an articulated connection with said bearing pin for moving said table between said first and second positions;

second guide means connected to said table for causing said table to pivot about said bearing pin to place said table in said second position after said table has moved toward said first position along a linear path perpendicular to the direction of advance of the sheet; and

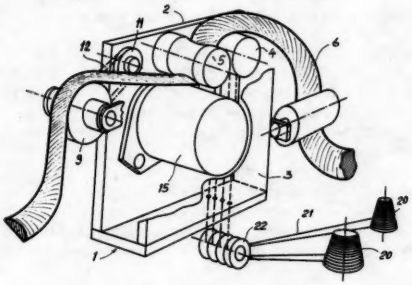
an ejection means for transferring the shaped and cut articles into the stacking chute when said table is in said second position.

4,565,514

APPARATUS FOR SHAPING IN A CALIBRATED WAY A RUBBER PRE-EXTRUDED PROFILED MEMBER FOR REGENERATING TIRES AND THE LIKE

Carlo Marangoni, Via Abetone, 49, 38068 - Rovereto Trento, Italy

Filed Oct. 5, 1984, Ser. No. 658,208
Claims priority, application Italy, Feb. 10, 1984, 82202 A/84
Int. Cl.[4] B29H *5/01, 5/28;* **B29C** *25/00*
U.S. Cl. 425—328 **6 Claims**



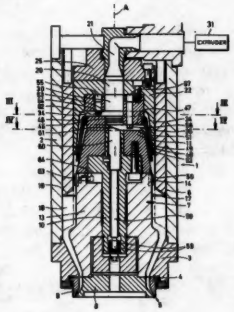
1. An apparatus for shaping in a calibrated way a preextruded rubber profile member, particularly designed for regenerating tires and the like, characterized in that it comprises a pair of calibrating rollers, rotating in opposite directions, therebetween a preextruded rubber profiled member may be inserted, said member having a undefined cross-section, driving means being further provided for driving both said calibrating rollers with a like peripheric speed.

4,565,515

NOZZLE ASSEMBLY FOR EXTRUDING A SYNTHETIC-RESIN TUBE

Rudolf Maier, Lohmar, Fed. Rep. of Germany, assignor to Battenfeld Fischer Blasformtechnik GmbH, Lohmar, Fed. Rep. of Germany

Filed Feb. 15, 1984, Ser. No. 580,467
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3305242
Int. Cl.[4] B29F *3/02*
U.S. Cl. 425—381 **18 Claims**



1. A nozzle assembly for extruding a tube, the assembly comprising:

an outer housing sleeve having an inner surface centered on an axis and having an axially forwardly directed front end;

a front core part within the sleeve at the front end thereof and forming with the inner housing surface an annular axially forwardly open extrusion passage;

an intermediate core part within the sleeve axially behind and attached to the front core part, the intermediate core part being formed with a pair of radially outwardly open grooves opening into the extrusion passage and each defined by

a respective annular rear face extending generally perpendicular to the axis,

a respective annular front face confronting the rear face and extending generally perpendicular to the axis, and

a heart-shaped annular surface axially bridging the respective faces, facing radially outward, and having a portion forming a radially outwardly directed point, the points being directed generally diametrally oppositely;

a rear core part within the sleeve axially behind and attached to the intermediate core part and axially rearwardly closing the extrusion passage; and

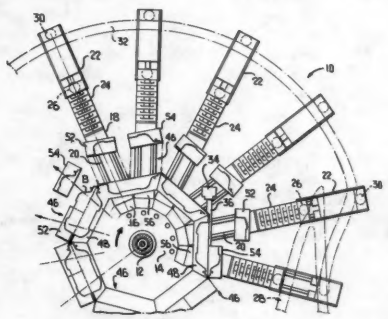
means including at least one feed passage in the rear and intermediate core parts for feeding a mass to be extruded under pressure and radially to the grooves at respective locations therein generally diametrally opposite the respective points so that the mass divides in planes generally perpendicular to the axis.

4,565,516

MOLD FOR LARGE CAPACITY CONTAINERS

John L. Szajna, Norridge, and Harry Weissenstein, Woodridge, both of Ill., assignors to Continental Plastic Containers, Inc., Stamford, Conn.

Filed Mar. 16, 1984, Ser. No. 590,316
Int. Cl.[4] B29C *5/10*
U.S. Cl. 425—540 **5 Claims**



1. A mold particularly adapted for use in a ferris wheel blow molding machine wherein the machine includes a horizontal rotating shaft and a plurality of molds are mounted on said shaft for rotation with said shaft generally in a vertical plane and each mold normally includes a radially fixed radially inner mold half and a radially movable radially outer mold half, said mold comprising a single radially inner radially fixed mold half and two cooperating separately radially movable radially outer mold half segments.

4,565,517

HYDRAULIC PRESS FOR PRESSING MATS OF PLASTIC MATERIAL REINFORCED WITH GLASS FIBERS

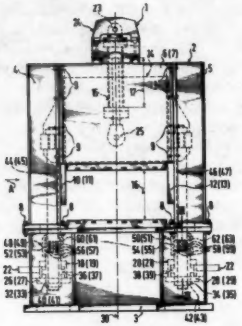
Dirk Brinkmann, Lünen-Niederaden; Wolfgang Muller, Dortmund; Walter Sauerwald, Dortmund; Klaus Schmidts, Dortmund; Dieter Therolf, Dortmund, and Ulrich Weber, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Jan. 28, 1985, Ser. No. 695,390

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1984, 3403006

Int. Cl.[4] B29F *1/00*; B29C *3/00*

U.S. Cl. 425—451.2 **5 Claims**



1. An hydraulic press for pressing plastic material into formed parts, said press comprising a stationary and a movable cross-piece as well as a press drive, said press drive for driving the movable cross-piece into and out of working relationship relative to said stationary cross-piece including at least one adjusting cylinder with a stroke length corresponding to the working range of the press and at least two couplable press cylinders of short stroke and a coupling means for coupling each of said press cylinders to said slidable cross-piece, each of which coupling means includes a coupling rod and a clamping device, each of said press cylinders having a first part fixed relative to said stationary cross-piece and a hollow lifting body movable relative to said first part and to said stationary cross-piece and through which hollow lifting body the coupling rod of the associated one of said coupling means is slidably guided, the clamping device of said associated coupling means being arranged on the lifting body for coupling the lifting body to its coupling rod.

4,565,518

MECHANISM FOR FORMING THREADS IN INJECTION MOLDED PARTS

Gary F. Altman, Clarkston, Mich., and Robert K. Beck, Jr., Westlake, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 26, 1984, Ser. No. 634,592

Int. Cl.[4] B29C *45/26, 45/33*

U.S. Cl. 425—568 **5 Claims**

1. A mechanism for forming a thread in a molded part, comprising, in combination,

a support, a die cavity for forming the molded part and a threaded bore adjacent the die cavity,

a threaded member rotatably mounted in the threaded bore for extension and retraction relative to the die cavity upon rotation thereof in the bore,

a threaded core member,

a rotatable operator mounted to the support,

cooperating key and keyway coupling means slidably and rotatably coupling the operator to the threaded core member for rotating the threaded core member in opposite rotative directions upon operation of the operator,

second coupling means coupling the threaded core member to the threaded member for linear movement therewith and extension into the die cavity upon rotation of the threaded core member by the operator in one rotative direction and retraction out of the die cavity upon rotation of the threaded core member by the operator in the other rotative direction, and

lost motion means in the key and keyway coupling means permitting initial startup of the operator in the one rotative direction independent of coupling of the operator to the threaded core member.

3. A mechanism for forming a thread in a portion of a molded part, comprising, in combination,

a support, a die cavity for forming the molded part,

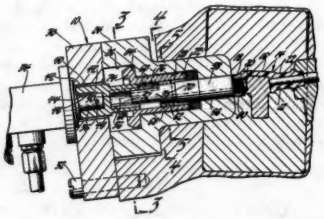
a threaded core member,

a rotatable operator mounted on the support,

coupling means slidably and rotatably coupling the threaded core member to the operator, the threaded core member rotating in place without linear translatory movement upon rotation of the operator in one and opposite rotative directions,

core member moving means,

means threadedly mounting the core member moving means on the support for linear translatory movement of the core member moving means relative to the support and toward the die cavity upon rotation of the core member moving



means in one rotative direction and linear translatory movement of the core member moving means relative to the support and away from the die cavity upon rotation of the core member moving means in an opposite rotative direction,

and means coupling the threaded core member to the core member moving means for rotating the core member moving means conjointly with the threaded core member upon rotation of the threaded core member by the operator,

rotation of the threaded core member in the one rotative direction by the operator rotating the core member moving means in the said one rotative direction to thread the core member moving means relative to the support and linearly translate the core member moving means toward the die cavity and conjointly move the threaded core member into the die cavity,

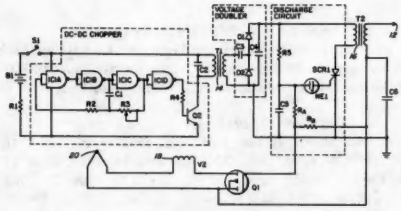
rotation of the threaded core member in the opposite rotative direction by the operator rotating the core member moving means in the said opposite rotative direction to thread the core member moving means relative to the support and linearly translate the core member moving means away from the die cavity and conjointly threadedly disengage the threaded core member from the threaded portion of the molded part,

the molded part remaining in the die cavity as the threaded core member threadedly disengages from the threaded portion thereof.

4,565,519
BURNER IGNITION SYSTEM

Forest J. Carignan, Bedford, Mass., assignor to Advanced Mechanical Technology, Inc., Newton, Mass.

Filed Jan. 21, 1983, Ser. No. 459,787
Int. Cl.[4] F23Q *9/08*
U.S. Cl. 431—46 **14 Claims**

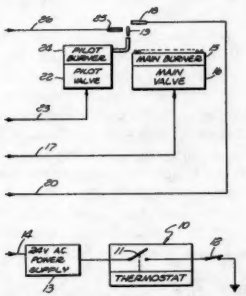


1. An ignition system for a burner comprising:
a low voltage electrical energy storage device;
circuit means for supplying low voltage, periodic current from said energy storage device;
a step-up transformer for converting said low voltage periodic current to a higher voltage output, the transformer having a significant leakage reactance due to leakage flux which makes up a substantial portion of the total flux through the transformer;
a capacitor charged by the higher voltage output from the step-up transformer; and
an output circuit for applying the capacitor voltage to an electrical igniter.

4,565,520
RECYCLING PILOT IGNITION SYSTEM

Ronald A. Gann, La Crescenta, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,097
Int. Cl.[4] F23Q *9/08*
U.S. Cl. 431—46 **2 Claims**

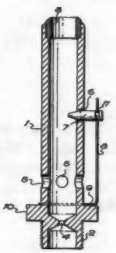


1. Ignition apparatus responsive to a thermostat comprising: a main burner; a main valve actuable to admit gas to said main burner; a pilot burner; a pilot valve actuable to admit gas to said pilot burner; a spark generator comprised of an electrode adjacent said pilot burner actuable to emit a spark and thereby to ignite the pilot gas; a flame rod to detect pilot gas ignition; an A.C. voltage produced when heat is requested by said thermostat; a pilot oscillator; a main oscillator; first means connected to receive said A.C. voltage for causing said pilot oscillator to oscillate; second means for actuating said pilot valve when said pilot oscillator is oscillating, said second means including an electrically operable pilot burner switching control means comprised of a single-pole, double-throw switch having a pole connected to said A.C. voltage, a normally closed contact connected to said spark generator to inhibit the same, a normally open contact connected to said pilot valve, and a solenoid energized by said pilot oscillator while oscillating; third means for igniting said pilot gas via said electrode when said pilot oscillator is oscillating; fourth means connected from said flame rod for causing said main oscillator to oscillate; fifth means connected from said main oscillator to sustain said pilot oscillator oscillations; sixth means connected from said main oscillator to cause said main valve to open, whereby a flame of said pilot burner causes ignition of said main burner, said fifth means including an electrically operable main burner switching control means including a single-pole, double-throw switch having a pole connected to said A.C. voltage, a normally closed contact connected to the input of said spark generator to provide enabling power thereto, a normally open contact connected to said main valve, and a solenoid energized by said main oscillator while oscillating, whereby said pilot burner is ignited by said spark generator when heat is requested by said thermostat and said spark generator is inhibited while said main burner is ignited.

4,565,521
SAFETY PILOT BURNERS

John Hancock, Leeds, England, assignor to Geo. Bray & Co. Limited, Leeds, England

Filed May 26, 1983, Ser. No. 498,373
Int. Cl.[4] F23D *13/00*
U.S. Cl. 431—75 **1 Claim**



1. Apparatus for inducing ambient air into a fuel gas stream and comprising a duct for said stream, which duct has at least one port through which ambient air may enter the duct and a constriction upstream of the at least one port with reference to the direction of flow of the stream, and means located along the duct downstream of said at least one port, for varying the resistance to the flow of gas and also the induction of said ambient air, said resistance varying means comprising a choke adjustable within said duct for controlling the effective internal cross-section thereof, said choke comprising a pin arranged for variable projection into the interior of said duct through an opening therein, wherein the variation of the projection of said pin is effected by means of a bi-metallic strip.

4,565,522
SHIELDED FLARE GAS BURNER

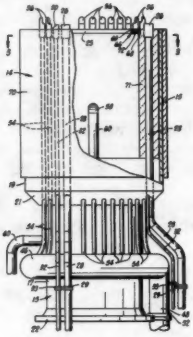
Robert E. Schwartz, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 645,420, Aug. 29, 1984. This application Feb. 1, 1985, Ser. No. 697,572
Int. Cl.[4] F23D *21/00*
U.S. Cl. 431—202 **17 Claims**

1. A heat and flame impingement shielded flare gas burner comprising:
a tubular member having a discharge end and an inlet end;
an external protective covering formed of refractory mate-

rial attached over the exterior wall surfaces of said tubular member at the discharge end thereof whereby a flame impingement shield is provided thereon;

an internal protective covering formed of refractory material attached over the interior wall surfaces of said tubular member at the discharge end thereof whereby a heat and flame impingement shield is provided thereon; and



pilot flame burner means positioned within and adjacent said discharge end of said tubular member attached to conduit means, said conduit means being disposed within said internal protective covering of refractory material whereby said conduit means are also shielded from heat and flame impingement.

4,565,523

GAS BURNER

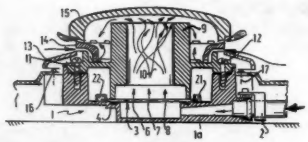
Wilhelm H. Berkelder, Aalten, Netherlands, assignor to Apparatenfabriek ATAG B.V., Netherlands

Filed May 12, 1983, Ser. No. 493,949

Claims priority, application Netherlands, May 24, 1982, 8202118

Int. Cl.⁴ F23D *13/40*

U.S. Cl. 431—354 **2 Claims**



1. A gas burner for use in a domestic cooking apparatus comrpising in combination:

a burner holder including a gas feed tube;

an interchangeable flow plate having apertures therein, the number of apertures being determined by the desired capacity of the burner, said flow plate comprising recesses for regulating the positioning of said flow plate with respect to said burner holder;

a flexible ring provided as a seal b[illegible]en said flow plate and said burner holder;

an associated mixing tube having respective inlet and outlet portions in which air is mixed with gas, said mixing tube comprising an extension connecting with a corresponding recess of said flow plate; and

a burner cover provided at the outlet of said mixing tube said flow plate and mixing tube being a matched pair whereby the capacity of said gas burner can be readily varied by changing both said flow plate and mixing tube by the substitution of the appropriate flow plate and cooperating mixing tube.

4,565,524

SEALED YARN HEATING CHAMBER

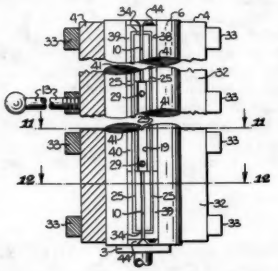
Walter Rünkel, Hückeswagen; Erich Lenk, and Karl Bauer, both of Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 563,300

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247040; Dec. 23, 1982, 3247626; Feb. 11, 1983, 3304752; Mar. 9, 1983, 3308251; Apr. 9, 1983, 3312823; May 21, 1983, 3318645; Jun. 11, 1983, 3321202; Jul. 22, 1983, 3326432; Oct. 5, 1983, 3336101

Int. Cl.⁴ F27B *9/28;* **F27D** *1/18;* **F26B** *13/00, 25/00*

U.S. Cl. 432—59 **27 Claims**



1. A heating chamber for thermally processing an advancing yarn, and comprising

a first member including a surface having an elongate discontinuity therein which extends in a longitudinal direction,

a second member including a surface which is substantially congruent with said surface of said first member,

means mounting said first and second members for relative movement between an operative position wherein the respective surface overlie each other and said surface of said second member and said discontinuity define a relatively narrow yarn passage formed therebetween for completely and closely surrounding the yarn along substantially the entire length of said heating chamber, and a threading position wherein said surface of said second member is positioned relative to said discontinuity to define an enlarged opening to facilitate threading of the yarn,

a pair of sealing strips mounted on at least one of said surfaces of said first and second members, said sealing strips being disposed on respective opposite sides of said discontinuity in said operating position of said members and extending longitudinally along substantially the entire length thereof and so that in said operating position said sealing strips are sealably disposed between said surfaces, and said surfaces and said sealing strips define a heating enclosure which includes said discontinuity, and

means for introducing a hot pressurized vapor into said heating enclosure when said members are in said operating position, whereby the hot vapor is adapted to enter into the gap between any noncontacting portions of the surfaces of said members lying between said sealing strips to thereby achieve substantial heat transfer.

4,565,525

TAPHOLE CONSTRUCTION OF A SHAFT FURNACE

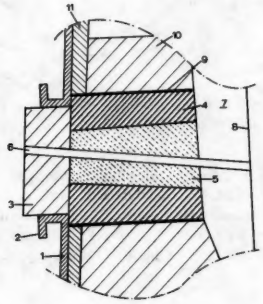
Jacobus Van Laar, Santpoort; Jacob Felthuis, Oudorp; Jahannes A.M. Butter, Uitgeest; Jacob Rengersen, Sint-Pancras, and Albert Sannes, Broek op Langedijk, all of Netherlands, assignors to Hoogovens Groep B.V., IJmuiden, Netherlands

Filed May 21, 1984, Ser. No. 612,430

Claims priority, application Netherlands, May 26, 1983, 8301862

Int. Cl.[4] F27B *14/08*

U.S. Cl. 432—248 **11 Claims**



10. A blast furnace having a metal shell, a refractory furnace lining inside the shell and a taphole construction comprising an aperture in the shell, a plug located in said aperture and a taphole brick structure forming a part of said lining with a taphole extending through said plug and said taphole brick structure wherein said taphole brick structure comprises at least one brick made of refractory material selected from the group consisting of graphite and semi-graphite out of contact with said shell, and a refractory material selected from the group consisting of chamotte and carbon positioned in contact with said shell.

11. In a blast furnace having a metal shell, a refractory furnace lining inside the shell and a taphole construction in the hearth of the blast furnace comprising an aperture in the furnace shell with behind it the lining consisting of at least one refractory brick, and in front of it, reaching through the aperture in the furnace shell, a refractory plug, a drilled taphole running through the plug and the lining, the improvement being that at least part of the refractory brick of the lining at the location where the taphole runs through it, consists of graphite, or semi-graphite having a high heat conductivity coefficient and is shielded from the furnace shell by refractory material with a considerably lower heat conductivity coefficient.

4,565,526

ORTHODONTIC APPLIANCE

Terushige Kawata, Tokushima; Takashi Kobayashi, Mino, and Katsuyuki Nakagawa, Osaka, all of Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

Filed Oct. 12, 1984, Ser. No. 660,365

Claims priority, application Japan, Jun. 28, 1984, 59-131962

Int. Cl.[4] A61C *7/00*

U.S. Cl. 433—8 **24 Claims**

1. An orthodontic appliance for correcting teeth in a patient's mouth, said orthodontic appliance comprising:

(a) a bracket adapted to be secured to one of the patient's teeth by means of an adhesive and having:

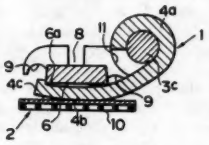
i. a slot for receiving a correcting wire;

ii. means for securing said bracket to said correcting wire; and

iii. an aperture;

(b) a magnet member; and

(c) a holder for said magnet member in the form of a clip member secured to said magnet and having a curved, elastic elongated arm adapted to be received into said



aperture of said bracket, said elongated arm resembling a leaf spring and carrying a protrusion for detachably latching onto said bracket.

4,565,527

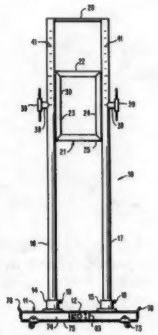
METHOD AND APPARATUS FOR TRAINING A HUMAN BY FEEDBACK ENHANCED LEARNING

Barry L. Burchett, 11 Cavalier Dr., Huntington, W. Va. 25701

Continuation of Ser. No. 464,722, Feb. 7, 1983, abandoned. This application Dec. 18, 1984, Ser. No. 683,047

Int. Cl.[4] A63B *69/00*

U.S. Cl. 434—248 **20 Claims**



1. A method of improving the learning of a motor skill by identifying a specific, critical parameter of the motor skill of a shooter shooting a basketball along a desired flight path to a basketball goal in which proprioception provides the primary feedback and then enhancing the specificity of this available feedback including:

determining when the specific, critical parameter of the motor skill is satisfactory and not satisfactory with artificial sensors having no contact with the basketball during its movement along the desired flight path;

positioning the artificial sensors and any frame supporting the artificial sensors so that they are not in the field of vision of the shooter when the shooter views the basketball goal to shoot the basketball to the basketball goal and in accordance with the desired flight path as determined by having the shooter shoot the basketball along the desired flight path to the basketball goal;

relaying information by nonproprioceptive channels to the brain from the artificial sensors in accordance with whether the specific, critical parameter of the motor skill of shooting the basketball along the desired flight path to the basketball goal is satisfactory or not satisfactory;

and the relayed information from the artificial sensors including automatically producing a first signal without contact with the basketball when the basketball has moved above the desired flight path by at least a first selected amount at a first selected distance from where the basketball is shot so that the specific, critical parameter of

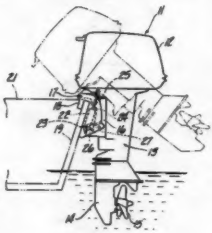
the motor skill is not satisfactory with the first selected distance being substantially prior to the high point of the desired flight path and being such that the velocity of the basketball has a minimum effect on the desired flight path and automatically producing a second signal, different from the first signal, without contact with the basketball when the basketball has moved below the desired flight path by at least a second selected amount at a second selected distance from where the basketball is shot with the second selected distance being substantially prior to the high point of the desired flight path and being such that the velocity of the basketball has a minimum effect on the desired flight path.

4,565,528

TILTING MECHANISM FOR MARINE PROPULSION DEVICE

Ryoichi Nakase, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 16, 1984, Ser. No. 590,891
Claims priority, application Japan, Mar. 19, 1983, 58-45322
Int. Cl.[4] B63H *71/76*
U.S. Cl. 440—1 **22 Claims**



1. A marine outboard drive comprising an outboard drive unit adapted to be supported relative to the hull of an associated watercraft for pivotal movement about a horizontal extending trim axis between a trim down and a trim up position and velocity responsive means for automatically moving said outboard drive unit from its trim down position to its trim up position when the velocity of the associated watercraft exceeds a predetermined value, said velocity responsive means comprising means for exerting a predetermined and constant force on said outboard drive for tilting up said outboard drive when the driving thrust and weight of said outboard drive fall below a predetermined value.

4,565,529

REMOTELY CONTROLLED STEERING APPARATUS FOR OUTBOARD TROLLING MOTORS

Walter P. Aertker, 2741 Hill St.; William L. Taylor, 3403 Coldstream Ave., and Frank Medica, 1007 Candy La., all of Alexandria, La. 71301

Filed Aug. 17, 1983, Ser. No. 523,940
Int. Cl.[4] B63H *21/26*
U.S. Cl. 440—7 **15 Claims**

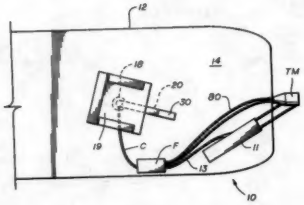
1. A control mechanism for a boat having a seat assembly to support a pilot and an outboard motor which is directionally controlled by extension and retraction of a control cable, said control mechanism comprising:

a. a pedal having a generally planar upper surface;

b. means for mounting the pedal at a location below the seat assembly so that the pilot occupying the seat can position one of his feet on the pedal and use the foot to operate the outboard motor;

c. a pair of switch surfaces disposed on opposite sides of the pedal, each surface extending above the pedal surface so that lateral movement of the user's foot, when positioned on the pedal, contacts one of the switch surfaces;

d. switch means associated with each switch surface for directionally moving the outboard motor to different positions responsive to pressure applied to one of the switch surfaces by one side edge of the user's foot; and



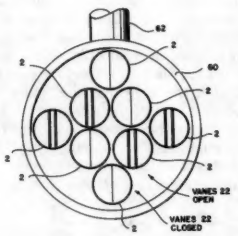
e. a generally U-shaped tiller having one open-ended portion and a pair of spaced apart side wall surfaces with the switch surfaces being the inside surfaces of the side walls, the tiller affixed to the top of the pedal and the open portion receiving the pilot's foot during use.

4,565,530

RECIPROCATING MARINE PROPULSION ENGINE

Donald L. Espenhain, 1671 Pasadena Dr., Dunedin, Fla. 33528

Filed Dec. 5, 1983, Ser. No. 557,832
Int. Cl.[4] A63B *35/00*
U.S. Cl. 440—18 **13 Claims**



9. A marine propulsion engine of the type having slideably mounted butterfly valves which open and close within a cylinder attendant a return and a thrust stroke, respectively, wherein the improvement comprises:

a cylindrical housing member;

a plurality greater than two of said engines mounted within said housing member;

said engines having their respective axes of symmetry disposed in parallel alignment with one another; and

said engines disposed in radial relation to the longitudinal axis of symmetry of said housing member and in circumferentially spaced relation to one another so that said engines cooperate with one another to provide a propulsive force,

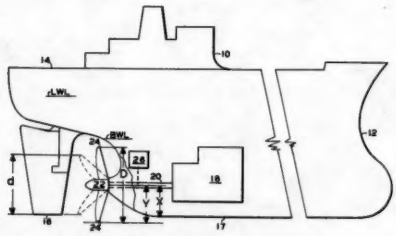
the strokes of the respective engines cooperating with one another so as to impart a centerline thrust to a vessel propelled by said engines.

4,565,531

SHIP PROPULSION SYSTEM

Peter M. Kimon, Mendham, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 24, 1984, Ser. No. 583,434
Int. Cl.[4] B64C 11/28
U.S. Cl. 440—50 10 Claims



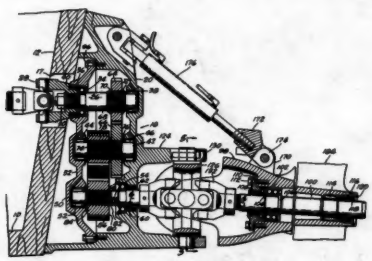
1. An improved efficiency propulsion system for a ship operated in deep and shallow depth waters and at variable loaded and ballast waterlines, comprising variable diameter propeller means, means for varying the diameter of said propeller between a maximum extended diameter D and a minimum diameter d, a propeller shaft mounting said propeller means for rotation in a stern portion of said ship, said propeller shaft extending generally parallel to the bottom keel of said ship and having an axis of rotation displaced from said bottom keel a distance less than one-half the maximum diameter D of said propeller means but more than one-half of said minimum diameter d of said propeller means, whereby when said ship is operated in a fully loaded condition in deep water said propeller means may be extended in diameter to obtain maximum propeller efficiency.

4,565,532

STERN DRIVE

John A. Connor, Costa Mesa, Calif., assignor to Kaama Marine Engineering, Inc., Costa Mesa, Calif.

Filed Feb. 18, 1981, Ser. No. 235,573
Int. Cl.[4] B63H 23/02
U.S. Cl. 440—57 1 Claim



1. A power train for a boat having a hull, a transom and an inboard motor, comprising

an outboard gearbox rigidly fixed to the outside of the transom;

a gearbox input shaft coupled to receive power from the inboard motor;

a gearbox output shaft being parallel to and vertically below said input shaft;

a drive train in said gearbox coupling said input shaft and said output shaft and including coupling elements all rotatably mounted about axes substantially parallel to said input shaft; and

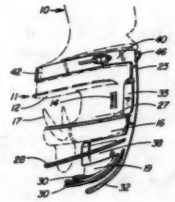
a propeller shaft coupled to said output shaft and being pivotally mounted to effect steering.

4,565,533

BOAT PROPELLER GUARD

Manfred H. Springer, 6935-14th Ave., Edmonton, Alberta, Canada (T6K 3V4)

Filed Oct. 26, 1983, Ser. No. 545,538
Claims priority, application Canada, Oct. 27, 1982, 414328
Int. Cl.[4] B63H 5/16
U.S. Cl. 440—71 4 Claims



1. A guard for use with an outboard motor including a motor shaft, a motor housing, a propeller having a propeller blade, and a fin, the guard comprising:

an elongate main rib terminating in a shock-absorbing resilient end portion,

attachment means for securing said rib to an outboard motor such that said main rib is disposed adjacent to and forwardly of said motor housing and fin with said rib end portion extending downwardly beyond the fin and generally rearwardly,

a plurality of shock-absorbing side ribs disposed along said main rib and each having a forward end secured to said main rib and terminating in free ends extending outwardly and rearwardly on either side of said motor housing so as to be disposed on either side of said propeller,

said main rib resilient end portion including a plurality of shock-absorbing lower ribs each having an upper portion secured to said main rib with the lower portions thereof extending in spaced, diverging relation downwardly and rearwardly of said fin so as to be disposed below said propeller, and,

arcuate rigid funnelling ribs attached to said main rib adjacent the upper portion thereof and extending downwardly on either side thereof to define therebetween a rearwardly directed funnel opening thereby to direct water flow therethrough from said main rib toward said motor housing to enhance cooling thereof.

4,565,534

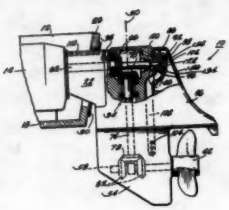
WATER PUMP LOCATION FOR MARINE PROPULSION DEVICE

Gerald F. Bland, Glenview, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 14, 1983, Ser. No. 560,904
Int. Cl.[4] B63H 21/14
U.S. Cl. 440—88 13 Claims

13. A marine propulsion device comprising a propulsion unit, water pump means communicating with an engine cooling jacket for circulating water through the cooling jacket, a vertically extending drive shaft rotatably supported in said propulsion unit and having an upper end and a lower end adapted to drive a propeller, and a horizontally extending drive shaft rotatably supported in said propulsion unit, driven by an engine, extending forwardly from and drivingly connected to said vertically extending drive shaft, and having an

aft end, one of said upper end of said vertically extending drive shaft and said aft end of said horizontally extending drive shaft



being located beyond the connection of said horizontally and vertically extending drive shafts, and extending into and driving said water pump means.

4,565,535

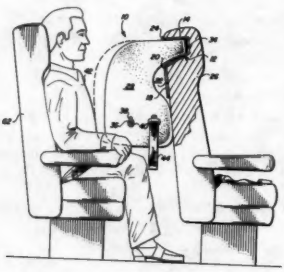
LIFE PRESERVER DEVICE

Tomas Tassy, 8101 Langdon Ave., #57, Van Nuys, Calif. 91406

Filed Jul. 18, 1984, Ser. No. 632,049

Int. Cl.[4] B64D *25/02*

U.S. Cl. 441—118 **19 Claims**



12. An improved life preserver device adapted for use on an aircraft, said device comprising:

(a) a shock absorbing member adapted to be interposed between a passenger and the back of a chair diposed in front of the passenger to brake forward movement of the person's body during a crash of the airplane;

(b) releasable interconnection means securing said shock absorbing member to said chair,

(c) said shock absorbing member having an opening therein adapted to receive a human head and further having a portion thereof contoured to receive a portion of a human body, and

(d) means associated with said member to attach said member to the passenger so as to act as a life preserver when said interconnection means are released.

4,565,536

DOLL WITH INGESTION SYSTEM

Silvana Vairo, Via Giulini 10, Como, Italy

Filed Oct. 26, 1983, Ser. No. 545,626

Int. Cl.[4] A63H *3/24*

U.S. Cl. 446—305 **5 Claims**

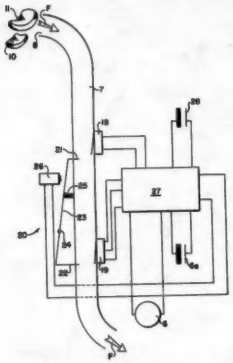
1. A doll having limbs and a motor for the movement thereof, comprising:

an esophagus having one end connected with a mouth of the doll for the insertion of objects simulating food into said one end of said esophagus;

a first sensor organ connected to said esophagus sensitive to the passage therewithin of said objects;

a second sensor organ connected to said esophagus spaced from and below said first sensor organ, said second sensor organ being selectively sensitive to prefixed values of determined characteristics of said objects; and

a two-phase timer operatively connected with each of said



first sensor organ and said second sensor organ selectively sensitive to prefixed values of determined characteristics of said object to stop said motor selectively after a first prefixed time phase and a second prefixed time phase, each related to the size of said object.

4,565,537

IMPACT RESPONSIVE TOY

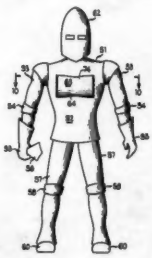
Randall J. Klimpert, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Continuation-in-part of Ser. No. 435,555, Oct. 21, 1982, Pat. No. 4,508,521. This application Sep. 19, 1983, Ser. No. 533,354

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.[4] A63H *17/02, 3/12*

U.S. Cl. 446—321 **20 Claims**



1. A toy having a body comprising:

means mounting a part of the body movably with respect to another part of the body so that the movable part is revolvable about an axis;

the movable part having first and second sections one of which is exposed to access and view while the other is obscured;

the first section representing one appearance;

the second section representing another appearance;

positioning means responsive to a force perpendicular to the axis for selectively exposing one section and obscuring the other section and moving the part to expose the other

section while obscuring the one section in response to impact upon the part;

the positioning means including biasing means between the parts urging the movable part to revolve about the axis from one position to another;

the positioning means also including releasable latch means restraining the movable part from revolving; and

the revolving part being movable perpendicular to the axis of revolution to effect release of the latch means.

4,565,538

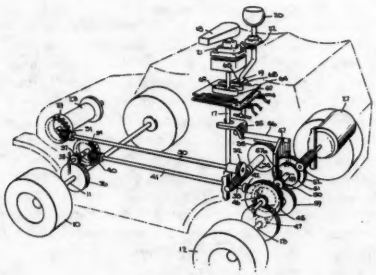
TOY WORK VEHICLE HAVING POWER TAKE-OFF

Melvin R. Kennedy, New York, N.Y.; Dietmar Nagel, Chester, N.J., and Abraham A. Arad, Westport, Conn., assignors to Buddy L. Corporation, New York, N.Y.

Filed Sep. 18, 1984, Ser. No. 651,714

Int. Cl.[4] A63H *17/14, 29/22*

U.S. Cl. 446—427 **8 Claims**



1. A toy vehicle including a chassis with front and rear axles mounted thereon, front wheels mounted on said front axle and rear wheels mounted on said rear axle; said vehicle comprising:

A. a bi-directional d-c motor mounted on said chassis;

B. a polarity-reversing switch mounted on said vehicle for connecting a battery to the motor, said switch having a fixed contact member and a contact member movable in relation thereto having a neutral position wherein it disconnects the battery from the motor, a forward position wherein it connects the battery to the motor in a polarity causing it to turn in one direction, and a back position wherein it connects the battery to the motor in the reverse polarity, causing it to turn in the opposite direction; and

C. means mounted on said chassis including a gearshift mechanism and a manual shift stick for controlling said gear shift mechanism to operatively couple the motor to at least one of the wheel axles, said stick being movably mounted on said chassis and having a neutral position in which the motor is decoupled from the axle and a lateral position in which the motor is coupled to the axle, said shift stick being coupled mechanically to the movable contact member of the switch by means such that when the stick is in its lateral position and is shifted forward, it thereby moves the movable contact member to its forward position whereby the motor then rotates in one direction and drives the vehicle in the forward direction, and when the stick is in its lateral position and is shifted back, it thereby moves the movable contact member to its back position, whereby the motor then reverses direction and drives the vehicle in the reverse direction;

D. said movable contact member being constituted by a slide carrying the movable contacts, said slide having a cruciform slot therein which cooperates with a template fixed to said chassis and having an aperture with a figure-of-eight configuration, the shift stick extending through the slot and the aperture which together permit the stick to occupy the five positions; namely, the neutral position, a first lateral position to one side of the neutral position in which the stick and the movable contact member are shiftable forward or back, and a second lateral position to the other side of the neutral position in which the stick and the movable contact member are shiftable forward or back.

4,565,539

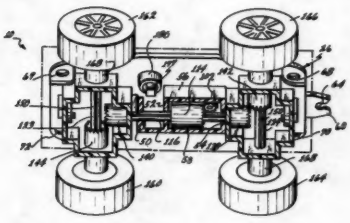
MULTIPLE-USE SHAFT FOR TOY

John S. Cook, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Sep. 19, 1983, Ser. No. 534,027

Int. Cl.[4] A63H *29/20;* **B60B** *35/12, 37/04*

U.S. Cl. 446—462 **5 Claims**



1. In combination with a toy vehicle having driven supporting wheels and including a journal box, the improvement which comprises;

a first multiple-use shaft rotatably mounted to said journal box in bearing surfaces formed in said journal box, said first multiple-use shaft having a generally cylindrical shape with a series of longitudinally arranged grooves in the outer surface running parallel to the axis of said first shaft along the entire length thereof, each of the grooves having a cross-sectional shape adapted to mate with both gear teeth and keys, the edges of each groove formed by the intersection of the walls thereof with the cylindrical surface being radiused to eliminate gouging of said bearing surfaces, and the outer cylindrical surface being adapted to serve as a bearing surface contacting and coacting with said bearing surfaces;

a first internally splined gear having teeth for engaging another gear and being slidably mounted on said first multiple use shaft by the fitting of the internal splines in the grooves of said first multiple-use shaft,

wherein said first shaft is journalled to said box at each end of said first shaft, wherein each of said ends of said first shaft is ring staked and wherein two of said supporting wheels are shrunk-fit, one to each end of said first shaft, each of said wheels including internal splines engaging associated ones of said first series of grooves on said first shaft.

4,565,540

TRIPOD HOMOKINETIC JOINT HAVING SWIVELLING ROLLERS

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Continuation of Ser. No. 377,999, May 13, 1982, abandoned. This application Apr. 10, 1984, Ser. No. 597,820

Claims priority, application France, Jun. 1, 1981, 81 10799

Int. Cl.[4] F16D *3/24*

U.S. Cl. 464—111 **5 Claims**

1. A homokinetic tripod joint comprising:

a tripod element having three arms having radially extending axes, each said arm having a spherical surface;

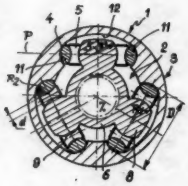
an element defining pairs of rectilinear runways;

three rollers running in respective said runways, each said roller being mounted to swivel about said spherical surface of a respective said arm and to be movable axially of

said respective arm, and each said roller having a convex toric inner surface;

three ring arrangements of rolling elements, each said arrangement comprising a plurality of said rolling elements, each said rolling element having opposed end portions of maximum diameter, a center portion of minimum diameter and a peripheral surface having a concave curvilinear shape in an axial section of said rolling element between said opposed end portions thereof;

said rolling elements of each said arrangement being interposed between said toric inner surface of the respective said roller and said spherical surface of the respective said arm for rolling contact therewith over the entire length of said peripheral surfaces of said rolling elements;



said rolling elements of each said arrangement being positioned relative to each other circumferentially of the respective said roller and said arm such that, upon relative movement of said roller axially of said arm, end portions of said rolling elements abut circumferentially of said spherical surface and limit the extent of said movement of said roller axially of said arm; and

a distance between the center of said spherical surface of each said arm and an axis of rotation of said tripod element is slightly greater than a distance between a plane of symmetry of the respective said pair of runways and an axis of rotation of said runway-defining element, said plane of symmetry extending through centers of said runways and extending parallel to said runway-defining element.

4,565,541

SMALL DEFLECTION COUPLING FOR OSCILLATING SHAFTS

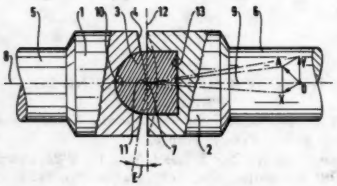
Georges Obrecht, Pont de Claix, France, assignor to Alsthom-Atlantique, Paris, France

Filed Apr. 17, 1984, Ser. No. 601,394

Claims priority, application France, Apr. 18, 1983, 83 06274

Int. Cl.[4] F16D *3/38*

U.S. Cl. 464—155 **7 Claims**



1. A small deflection coupling for oscillating shafts, said coupling comprising:

first and second end pieces suitable for fixing to the facing ends of first and second shafts, said end pieces having respective longitudinal axes which substantially intersect at a coupling center, and having respective first and second concave cylindrical bearing surfaces which are of circular symmetry about respective first and second oscillation axes which also substantially intersect at the coupling center and which are perpendicular to respective ones of said longitudinal axes of the first and second end pieces, said cylindrical bearing surfaces being of the same diameter;

an intermediate piece having first and second convex cylindrical bearing surfaces which are of circular symmetry about two substantially intersecting perpendicular oscillation axes, said intermediate part being disposed between said end pieces which are oriented relative to one another in such a manner that the first and second convex bearing surfaces of the intermediate piece engage the first and second concave bearing surfaces of the first and second end pieces repsectively, thereby simultaneously enabling driving torque to be transmitted between said shafts when rotating about their axes, enabling axial thrust to be transmitted between said shafts, and, by rocking about said first and second oscillation axes, enabling said shafts to oscillate relatived to each other;

each of said end pieces being in the form of a solid having a front face facing the other end piece, which front face is in the form of a convex dihedral with the line of intersection of the dihedral half-planes constituting the oscaillation axis of the end piece, the dihedral angle being equal to 180° less twice the maximum angle of deflection between the axes of the two end pieces, said concave cylindrical bearing surface being hollowed out in the front face of the end piece such that the cross section of the bearing surface is an arc of a circle extending over said dihedral angle, such that, when said intermediate piece is received in said hollow and any force is applied thereto in a direction which is perpendicular both to the longitudinal axis of the end piece and to the oscillation axis of the end piece, and in particular when any torque is transmitted thereby, a longitudinal reaction is created tending to urge the end piece away form the intermediate piece, the length of the cylindrical concave bearing surface parallel to the generator lines of the cylinder being equal to the length of the convex bearing surface of the intermediate piece so as to prevent the intermediate piece from moving in the hollow of the concave bearing surface in a direction parallel to the oscillation axis of the end piece; and

a retaining member for holding said end pieces together agianst said longitudinal reaction;

the improvement wherein:

the intermediate piece is constituted by a solid core having a surface consisting solely of two portions which are semi-cylindrical having a right cross section to the form of a semicircle and which have an axial length equal to the diameter of the semicircle, the center of the semicircle being substantially at the mid point of said axial length whereby the surface of the core is constituted by said semi-cylindrical bearing surfaces, each of which is terminated by two plane semi-circular bearing surfaces extending from the ends of the semicircles of the cylinder, and said plane semicircular bearing surfaces consituting end faces of a semi-cylindrical volume whose side surface is constituted by the other semi-cylindrical bearing surface, whereby said core is capable of transmitting high driving torque and high axial thrust simultaneously, while being easy to machine.

4,565,542

LOCKING MECHANISM FOR A DRUG DELIVERY SYSTEM

Harvey F. Berg, Stacy, Minn., assignor to Deltec Systems, Inc., St. Paul, Minn.

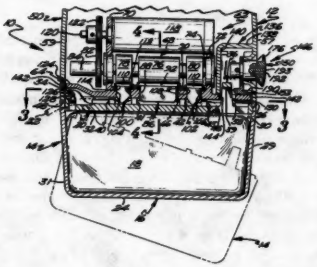
Filed Oct. 19, 1984, Ser. No. 663,051

Int. Cl.[4] A61M *1/00*; B60R *25/02*

U.S. Cl. 604—131 **20 Claims**

1. Modular system for delivering a drug to a patient comprising, in combination: a control module; a reservoir module; means for removably attaching the reservoir module to the control module along one end, with the removably attaching

means having a first position wherein the reservoir module and the control module are separable from each other and a second position wherein the reservoir module and the control module, are interconnected and nonseparable from each other; a locking mechanism for holding the reservoir module and the control module in their second position; with the reservoir module comprising, in combination: a container for storing a drug to be delivered by the system, and means for providing communication between the drug storage container and the patient; with the control module comprising, in combination: means for forcing the drug stored in the drug storage container through the communication providing means at desired rates to the patient, with the drug forcing means of the control module interacting with the communication providing means of the reservoir module when the reservoir module is removably secured to the control module for purposes of delivering a drug stored in the drug storage container to the patient at desired rates; with the locking mechanism comprising, in combination: a latch button having a longitudinal axis and a portion eccentric to the longitudinal axis; means for rotatably and



slideably mounting the latch button about the longitudinal axis in the control module; means for limiting the slideable movement of the latch button in the control module in a first direction; a locking bolt, with the locking bolt being rotatably received on the eccentric portion of the latch button; means for preventing slideable movement of the locking bolt with respect to the latch button; means for preventing the locking bolt from rotating with the latch button and for allowing slideable movement of the locking bolt with the latch button; means for biasing the latch button in a second direction opposite to the first direction; and means connected to the reservoir module for engaging with the locking bolt with the latch button having a first position wherein the locking bolt does not engage with the engaging means of the reservoir module, a second, longitudinal position located longitudinally in the first direction from the first position, and a third, rotated position located longitudinally in the first direction from the first position and in a rotated position from the first and second positions allowing the locking bolt to engage with and place a force on the engaging means of the reservoir module.

4,565,543

AUTOMATIC INJECTION DEVICE

Hendrik M. Bekkering, and Henricus H. M. Vulink, both of Olst, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Oct. 24, 1983, Ser. No. 544,704

Claims priority, application Netherlands, Oct. 27, 1982, 8204142

Int. Cl.[4] A61M *5/20*

U.S. Cl. 604—135 **6 Claims**

1. An automatic injection device, comprising an assembly of a discharge mechanism, a cartridge holder and a cartridge slidably accommodated in the cartridge holder; the discharge mechanism comprising a sleeve that is open on one side, a plunger that is movable in the sleeve, a coil spring that acts on said plunger to move same toward the open end of the sleeve, a locking device that cooperates with said plunger to prevent undesired movement of the plunger; the cartridge comprising a glass ampoule having a needle connected to one end thereof and being open-ended at the opposite end thereof, a part of said ampoule remote from the needle comprising a hollow cylinder having an entirely or substantially uniform inside diameter, a

piston adapted for movement by the plunger being provided in said cylinder, a movable inner sleeve surrounding said coil spring and adapted to bear against said ampoule at its open end; said syringe being characterized in that the ampoule contains at least one injection liquid; said syringe being further characterized in that an annular member of slightly resilient material is interposed between the open end of the ampoule remote from the needle and said movable inner sleeve.

4,565,544

DEVICE FOR INTRODUCING A CATHETER

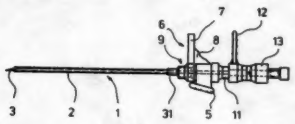
Franz-Josef Müller, St. Wendel; Viktor Krütten, Idstein, and Gerd Krick, Bad Homburg, all of Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Feb. 10, 1984, Ser. No. 579,210

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1983, 3304914

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—164 **23 Claims**



1. A device for introducing a catheter into body cavities comprising

an outer catheter portion and an inner puncture needle portion,

said catheter portion, rearwardly of the segment thereof to be introduced into said cavities having a bush circumferentially and rigidly disposed thereon,

said bush comprising a forward and a rearward coaxial segment, the forward segment having a tail portion of forwardly directed frustroconical crosssection, said tail portion being located between said forward and said rearward coaxial segments,

a pair of substantially coplanar wings rigidly disposed on the rearward section of said bush on opposite sides thereof, said wings being so disposed that when said catheter is

disposed in the body cavities the said wings will lie on the skin of the patient and be attachable thereto,

a grip piece rigidly attached to the needle portion disposed rearwardly of the bush, and a grip module comprising an upper grip plate and a lower hollow extension portion,

said extension portion being dimensioned to engage snugly around the forward segment of the bush, but detachable therefrom, and having a longitudinal slit therein.

22. A grip module comprising an upper grip plate and a lower hollow extension portion, for use with a device for introducing a catheter into body cavities comprising an outer catheter portion and an inner puncture needle portion,

said extension portion having a longitudinal slit therein and comprising a body segment and a rearward segment coaxial therewith,

said body segment having a substantially cylindrical cross section,

said rearward segment having a forwardly directed frustroconical cross section, the internal diameter of the forward end of said segment being the same as that of the body segment.

said upper grip plate being located on and attached to the outer surface part of said extension portion substantially opposite to the part of the outer surface having the slit therein.

4,565,545

CATHETER INSERTION DEVICE

Tatsuo Suzuki, Yokohama, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 422,397, Sep. 24, 1982, abandoned. This application Apr. 23, 1985, Ser. No. 726,185

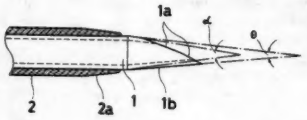
Claims priority, application Japan, Jun. 4, 1982, 57-82293[U]

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—164 **9 Claims**

1. In a catheter insertion device comprising an inner needle having a beveled surface at its distal end which forms a beveled point at said distal end; an inner needle hub attached to the proximal end of said inner needle; an outer catheter having an axially extending bore means for receiving said inner needle and adapted to receive said inner needle in said bore means so that said beveled point formed by said beveled surface is slightly projected from said outer catheter when said inner needle is inserted, and further having a catheter portion with a tapering outside diameter at its distal end; and a catheter hub attached to the proximal end of said outer catheter and adapted to detachably engage with said inner needle hub,

the improvement comprising



said inner needle has an inner needle tapered portion at the distal portion thereof, said beveled surface being partially formed in said inner needle tapered portion and forming said beveled point at said distal end of said needle, said inner needle tapered portion being longer than said beveled surface portion in the axial direction of said inner needle, wherein the width of said beveled surface is not more than 90% of the outside diameter of said inner needle and not less than 40% of the outside diameter of said outer catheter, the tapering angle of said inner needle tapered portion is from 4 to 16 degrees, and the length from the beveled point to the rear end of the inner needle tapered portion is not more than 4.5 mm.

4,565,546

CONDENSATION PRODUCT AND USE THEREOF AS DISPERSANT FOR PITCH IN WATER SLURRY

Osamu Ohzeki, Fukui; Katsuhiko Shimakawa; Akihiko Shimizu, both of Sabae, and Toshio Kanai, Yokohama, all of Japan, assignors to Nikka Chemical Industry Co., Fukui and Chiyoda Chem. Engineering & Construction Co. Ltd., Kanagawa, both of, Japan

Filed Jun. 27, 1984, Ser. No. 625,216
Claims priority, application Japan, Jun. 28, 1983, 58-117764
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 20 Claims

1. A condensation product obtained by reaction of (A) a first aromatic compound Y containing one or more sulfonic acid or sulfonate groups and having a ratio of its organic values to inorganic value of at least 0.6, (B) a second aromatic compound Z containing one or more sulfonic acid or sulfonate groups and having a ratio of its organic character value to inorganic character value of not greater than 0.5 and (C) an aldehyde, said condensation product having repeating monomeric units (I) having an aromatic moiety derived from Y and monomeric units (II) having an aromatic moiety derived from Z, the molar ratio of I:II being 1:10 to 7.1:1.

5. A composition of matter comprising:

an aqueous medium;

particulate pitch; and a dispersant which is a condensation product according to claim 1.

4,565,547

DETERGENT COMPOSITION FOR FUEL-SYSTEM PARTS

Toshiya Takada, Aichi, Japan, assignor to Toyoto Jidosha Kabushiki Kaisha, Toyoto and Japan Bars Company Limited, Osaka, both of, Japan

Filed Jul. 3, 1984, Ser. No. 627,476
Claims priority, application Japan, Jul. 12, 1983, 58-126762
Int. Cl.[4] C10L *1/14*
U.S. Cl. 44—51 7 Claims

1. A gasoline suitable for use internal combustion engines, comprising:

a detergent consisting essentially of 5–20 parts by weight of a saturated or unsaturated fatty acid containing 18 carbon atoms, 2–15 parts by weight of a mixture of ammonia and an amine selected from the group consisting of alkylamines of 1–10 carbon atoms, alkanolamines containing 2–10 carbon atoms, morpholine, and mixtures thereof, 5–20 parts by weight of an ester of a higher fatty acid, and 5–15 parts by weight water, and a hydrocarbon fuel containing said detergent in about 1,000–30,000 ppm.

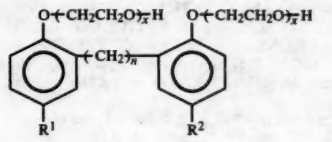
4,565,548

MOTOR FUEL COMPOSITION

Marshall E. Davis, Poughkeepsie, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,469
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 15 Claims

1. A clear stable motor fuel composition comprising a mixture of alcohol selected from the group consisting of methanol in the amount of about 2.0 to 5.0 vol. %, ethanol in the amount of about 2.0 to 10.0 vol. %, and mixtures thereof in the amount of about 3 to 9.0 vol. % about 2.0 to 10 vol. % of a cosolvent alcohol selected from the group consisting of tertiary butyl alcohol, isopropanol, and mixtures thereof; water to provide a total water concentration of about 0.1 to 0.5 wt. % (basis weight of motor fuel composition); about 0.01 to 3.0 wt. % (basis weight of motor fuel composition) of a nonionic surfactant represented by Formula I, as follows:



I

wherein: R^1 and R^2 may be the same or different and are selected from the group consisting of hydrogen and methyl; n is an integer from 1 to 3; and x is an integer from 8 to 10; and the balance of said motor fuel composition being gasoline.

4,565,549

AQUEOUS SLURRY OF A SOLID FUEL AND A PROCESS FOR THE PRODUCTION THEREOF

Mait M. Mathiesen, Arild; Lars I. Gillberg, Lund; Karl M. E. Hellsten, Ödsmål, and Gunvor B. T. Karlsson, Stenungsund, all of Sweden, assignors to AB Carbogel, Helsingborg and Berol Kemi AB, Stenungsund, both of, Sweden

Filed May 6, 1983, Ser. No. 492,196
Claims priority, application Sweden, May 7, 1982, 8202879
The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 9 Claims

1. An aqueous slurry consisting essentially of water, a solid fuel in the form of a pulverized, carbonaceous material, and 0.02–2% by weight of at least one additive, the solids content of the slurry being 65–90% by weight, and the aqueous slurry being characterized in that the additive consists essentially of a nonionic water-soluble surface active alkylene oxide adduct with the following formula

$$RO(CH_2CH_2O)_nH$$

wherein R denotes an aliphatic or acyl group comprising 10–24 crbon atoms or a substituted aryl group comprising 12–54 carbon atoms; and n is at least 40 but less than 100.

5. A process for producing an aqueous slurry consisting essentially of water, a solid fuel in the form of a pulverized, carbonaceous material, and 0.02–2% by weight of at least one additive, the solids content of the slurry being 65–90% by weight, characterized by the following steps

(a) wet milling a carbonaceous starting material together with water at a solids content of 20–50% by weight in at least one milling step;

(b) separating, any remaining inorganic material of the carbonaceous starting material from the carbonaceous material of said starting material;

(c) dewatering the carbonaceous material to a solids content which is substantially equal to the solids content of the final slurry;

(d) adding to and distributing in the dewatered carbonaceous material said additive consisting essentially of a nonionic water-soluble surface active alkylene oxide adduct with the following formula

$$RO(CH_2CH_2O)_nH$$

wherein R denotes an aliphatic or acyl group comprising 10–24 carbon atoms or a substituted aryl group comprising 12–54 carbon atoms; and n is at least 40 but less than 100.

495-169 O.G.-86-8

4,565,550

HYDROCARBYL SUBSTITUTED CARBOXYLIC ACYLATING AGENT DERIVATIVE CONTAINING COMBINATIONS, AND FUELS CONTAINING SAME

Casper J. Dorer, Jr., 4852 Fairlawn Rd., Lyndhurst, Ohio 44124, and Katsumi Hayashi, 8290 Mentorwood Dr., Mentor, Ohio 44060

Division of Ser. No. 404,845, Aug. 9, 1982. This application Mar. 12, 1985, Ser. No. 711,113

Int. Cl.[4] C10L *1/14*

U.S. Cl. 44—62 111 Claims

1. A composition comprising a major amount of a normally liquid fuel and a minor amount of:

(A) a first component selected from the group consisting of:

(i) an oil-soluble ethylene backbone polymer having a number average molecular weight in the range of about 500 to about 50,000;

(ii) a hydrocarbyl-substituted phenol of the formula

$$(R^*)_a—Ar—(OH)_b \quad (I)$$

wherein R* is a hydrocarbyl group selected from the group consisting of hydrocarbyl groups of from about 8 to about 30 carbon atoms and polymers of at least 30 carbon atoms, Ar is an aromatic moiety having 0 to 4 optional substituents selected from the group consisting of lower alkyl, lower alkoxyl, nitro, halo or combinations of two or more of said optional substituents, and a and b are each independently an integer of 1 up to 5 times the number of aromatic nuclei present in Ar with the proviso that the sum of a and b does not exceed the unsatisfied valences of Ar;

(iii) mixtures of (i) and (ii); and

(B) as a second component, the oil-soluble reaction product of (B) (I) a hydrocarbyl-substituted carboxylic acylating agent with (B) (II) one or more amines, one or more alcohols, or a mixture of one or more amines and/or one or more alcohols, the hydrocarbyl substituent of said agent (B) (I) being selected from the group consisting of

(i') one or more mono-olefins of from about 8 to about 30 carbon atoms;

(ii') mixtures of one or more mono-olefins of from about 8 to about 30 carbon atoms with one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of polymers of mono-l-olefins of from 2 to 8 carbon atoms, or the chlorinated or brominated analogs of such polymers; and

(iii') one or more olefin polymers of at least 30 carbon atoms selected from the group consisting of

(a) polymers of mono-olefins of from about 8 to about 30 carbon atoms;

(b) interpolymers of mono-l-olefins of from 2 to 8 carbon atoms with mono-olefins of from about 8 to about 30 carbon atoms;

(c) one or more mixtures of homopolymers and/or interpolymers of mono-l-olefins of from 2 to 8 carbon atoms with homopolymers and/or interpolymers of mono-olefins of from about 8 to about 30 carbon atoms; and

(d) chlorinated or brominated analogs of (a), (b), or (c).

4,565,551

COAL GASIFICATION APPARATUS

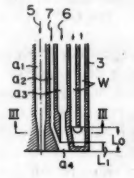
Koji Okane, Ibaraki; Hidemasa Nakajima, Ibaraki; Shozo Okamura, Ibaraki; Masanobu Sueyasu, Kawachinagano, and Takashi Manago, Ibaraki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 18, 1983, Ser. No. 543,131

Int. Cl.[4] C10J *3/48, 3/50*

U.S. Cl. 48—92 3 Claims

1. An apparatus for the gasification of a solid carbonaceous material, which comprises, in combination, a gasification furnace containing a molten metal bath and a non-immersing multihole lance connected to said furnance and passing through a top opening therein through which lance a finely divided solid carbonaceous material, oxygen gas, and a supplementary gasifying agent are blown onto the molten metal bath, said lance having a main injection nozzle with an injection end opening at the face of said lance and communicated with a main passageway for the solid carbonaceous material, said main injection nozzle with an injection end opening at the face



of said lance being surrounded by a plurality of subsidiary injection nozzles, each of said subsidiary injection nozzles having injection ends at the face of the lance and being, communicated with subsidiary passageways for oxygen gas and the supplementary agent, the end of each passageway for said supplementary gasifying agent communicating with a corresponding separate passageway for oxygen gas at a location above an injecting end of corresponding subsidiary nozzle.

4,565,552

METHOD OF PRODUCING BIOGAS AND COMPOST

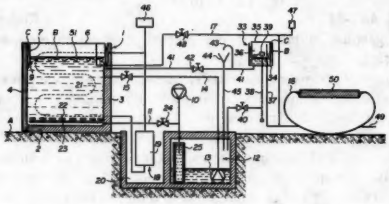
Armand Cotton, 183 route de Mon Idée, 1253 Crête, Vandoeuvres, Geneva, Switzerland

Filed Nov. 7, 1984, Ser. No. 669,578

Claims priority, application Switzerland, Nov. 9, 1983, 6033/83

Int. Cl.[4] C02F *3/30;* C05F *11/08;* C12P *5/02*

U.S. Cl. 48—197 A 4 Claims



1. A method of producing biogas and compost, which comprises the steps of (1) fermenting in an aerobic environment solid fermentable organic matter at substantially ambient temperature and of appropriate moisture content to raise its temperature to a temperature greater than that required for mesophile methanogenic fermentation in an anaerobic environment, (2) flooding the fermenting organic matter with liquid at substantially ambient temperature to increase the temperature of the liquid by heat exchange with the fermenting organic matter, (3) removing the liquid to store it in a heat insulated environment to reduce the moisture content of the matter to a suitable degree, (4) raising the temperature of said matter to said greater temperature by aerobic fermentation, (5) again flooding the matter with the stored liquid to raise the temperature of the latter still further by heat exchange with the fermenting matter, (6) repeating steps (3), (4) and (5) if the liquid flooding the matter has not yet reached the temperature required for mesophile methanogenic fermentation of the matter in an anaerobic environment, (7) leaving the liquid in situ once said required temperature has been reached to enable anaerobic mesophile methanogenic fermentation to take place, and (8)

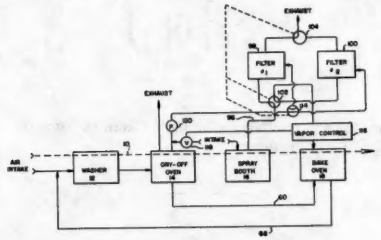
collecting the gas given off during such anaerobic fermentation.

4,565,553

METHOD FOR THE REMOVAL AND DISPOSAL OF PAINT SOLVENT

William C. Nowack, 340 Kriwel, Twin Lakes, Wis. 53181

Filed May 24, 1984, Ser. No. 614,101
Int. Cl.⁴ B01D *53/04*
U.S. Cl. 55—59 **13 Claims**



1. In an industrial painting system including a spray booth and a bake oven, a method for the removal and disposal of the paint solvent contained in the spray booth exhaust gas discharged from the spray booth comprising,

(a) passing solvent laden exhaust gas from said spray booth through a filter capable of adsorbing said solvent from said spray booth exhaust to remove said solvent from said exhaust;

(b) degassing said filter by passing through said filter a gas such that the pressure drop across said filter is less than about six inches of water, said gas having a velocity and temperature sufficient to remove said solvent from said filter such that the solvent concentration in the gas exhausted from the filter does not exceed the lower explosive limit fcr the solvent;

(c) introducing said filter exhaust to said bake oven to increase the solvent concentration in the bake oven atmosphere; said degassing gas velocity and temperature being so selected that upon introduction of said filter exhaust to said bake oven, the solvent concentration in the bake oven does not exceed the lower explosive limit of the designed theoretical level of operation of the brake oven;

(d) removing a portion of the atmosphere of the bake oven from the bake oven and incinerating said bake oven atmosphere so as to oxidize said solvent to non-polluting combustion products and thereby dispose of said solvent.

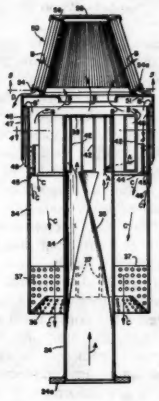
4,565,554

STEAM SEPARATING APPARATUS AND SEPARATORS USED THEREIN

Albert J. Zipay, Clifton, and Walter P. Gorzegno, Morristown, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation of Ser. No. 415,303, Sep. 7, 1982, Pat. No. 4,483,696. This application Jun. 20, 1984, Ser. No. 622,308
Int. Cl.⁴ B01D *19/00*
U.S. Cl. 55—185 **2 Claims**

1. A steam separator comprising an outer shell, a hood extending over the upper end portion of said shell and defining a first outlet passage for directing a portion of a steam-water mixture from a previous separator stage in a downwardly direction and a second outlet passage for directing another portion of said mixture in an upwardly direction, a plurality of plates extending over and supported by said hood, each plate having a W-shaped cross-section and being nested between two adjacent plates in a spaced-apart parallel relationship to define a radially extending W-shaped path between each two adjacent plates, shroud means disposed at the upper and lower end portions of said plates for supporting said plates in a frusto-conical configuration with said W-shaped cross-section extending in a general radial direction, said frusto-cone converging radially inwardly from the lower portion of said cone to the upper portion thereof; means for directing the steam water mixture portion from said second outlet passage from the



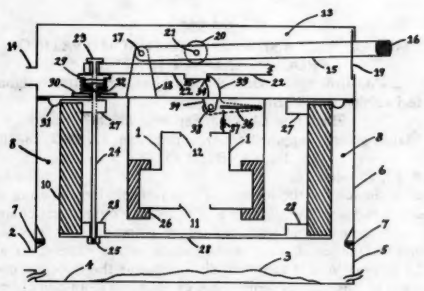
interior of the frusto-cone radially outwardly through said paths so that is impinges on said plates to separate the steam from the water in said mixture, said plates being arranged to discharge said mixture from said paths in a substantial tangential direction to said frusto-cone, and at least one opening extending through said shroud means for permitting said water to drain therefrom.

4,565,555

VACUUM COLLECTOR

David R. Menasian, 12140 Powerhouse Rd., Potter Valley, Calif. 95469

Filed Sep. 29, 1982, Ser. No. 428,513
The portion of the term of this patent subsequent to Dec. 10, 2002, has been disclaimed.
Int. Cl.⁴ B01D *46/00*
U.S. Cl. 55—288 **16 Claims**



1. A high-suction portable, hybrid shop-style and continuous-duty vacuum collector, whose arrangement also has special purpose applicability, with improved capability and effectiveness in extending the running time between filter cleanings while filtering a wide range of sizes and weights of mixed dust and particulate debris from gases such as air and incorporating a compact, efficient and simple filter-cleaning mechanism that

protects the operator and the environment from exposure to dust during cleaning but cannot accidentally be activated during the dirt collection process, comprising:

a detachable rigid air-tight dust-accumulating enclosure, open on top, into which the incoming particulate-laden gas flows from an inlet on entering in a direction to avoid striking any filter surfaces directly, and which collects the heavier particles by gravity on the bottom of said dust enclosure; and

filter assembly means for producing a very large total filter surface area by mounting as an integral assembly, at least one gas-penetrable and dust-impervious hollow pleated filter, in which the normal directions to all of the filter surfaces are placed in a plane and are thus confined to two dimensions of three-dimensional space, and with this filter surface orientation no filter surface faces or has its normal in the third dimension, in order to collect the lighter particles and dust on the outside of said oriented filter surfaces, and carried on a housing completely covering said open top of said dust enclosure so as to constitute a closed dust chamber containing said filter assembly, and which communicates with the clean gas region of said housing only through said filter; and

filter cleaning means, further comprising:

filter moving means for constrained motion of said integral filter assembly as a unit only in said third dimension, and operated from outside said housing without having to disconnect any connections or subject said filter surfaces to any deformation; and

filter shock means for subjecting said integral filter assembly as a unit to a sharp impact shock in said third dimension by abruptly arresting said motion in order to dislodge said particles and dust adhering to the outside of said filter surfaces, enabling them to fall by gravity to said bottom of said dust enclosure; and

flexible filter connection means connecting said covering housing to said filter assembly for maintaining the integrity of the internal gas passages from said filter assembly to the clean gas region of said housing while said motion and said shock are being applied, so that none of said particles and dust either enter said clean gas region or are dispersed to the external environment; and

suction means with in the filter hollow for applying blower suction to the clean gas inside of said integral filter assembly; and

an outlet from said housing for discharging into the surrounding atmosphere the filtered air from said suction means; and

interlock means for rendering said filter cleaning means inoperable when said suction means is operating.

4,565,556

MOLECULAR AND ISOTOPIC FRACTIONATING PROCESS AND APPARATUS

Ladislao J. Biró, 1567 Conde, Buenos Aires, Argentina, assignor to Ladislao José05 Biró, Argentina

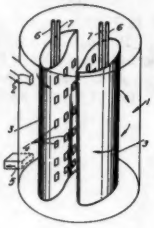
Filed Jan. 10, 1983, Ser. No. 456,987

Claims priority, application Argentina, Jan. 12, 1982, 288105

Int. Cl.⁴ B01D *45/12*

U.S. Cl. 55—460 **4 Claims**

1. A device for the molecular and isotopic fractionating of gaseous mixtures comprising a substantially cylindrical chamber provided with at least one tuyere disposed near one end thereof to tangentially introduce gaseous mixture thereinto, an exhaust port in said chamber disposed near the opposite end thereof to tangentially remove heavy fractions from said chamber, at least two diametrically opposed hollow fixed aerodynamically shaped profile members having rounded longitudinal surfaces tapering to thin longitudinal edges, said members being longitudinally disposed within said chamber and extending substantially throughout the length thereof to direct said gaseous mixture in a helicoidal path outside of and between said profiles and cause pulsations, thereby guiding light fractions of said gaseous mixture toward the inner portion of said chamber, said profiles being provided on the inner opposed side walls thereof with holes for receiving said light fractions,



and means for removing said light fractions from the inner portion of said chamber.

4,565,557

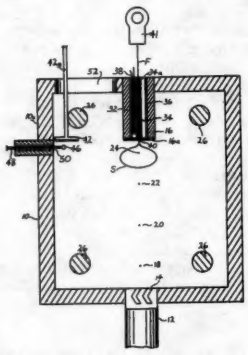
CONTAINERLESS HIGH PURITY PULLING PROCESS AND APPARATUS FOR GLASS FIBER

Robert J. Naumann, and Edwin C. Ethridge, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 526,754, Aug. 26, 1983, abandoned. This application Apr. 19, 1984, Ser. No. 601,130

Int. Cl.⁴ C03D *37/027*

U.S. Cl. 65—1 **13 Claims**



1. Apparatus for producing optical glass fibers from specimen material comprising:

a levitation furnace having a levitation axis along which said material may be levitated;

means for heating said material to form a melt;

a fiber pulling bore formed in said furnace housing through which bore said material may be pulled from said melt in fiber form;

cooling means surrounding said bore to cool said fiber;

insulation means encasing said cooling means and fiber pulling bore;

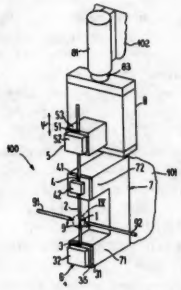
fiber initiating means; and

means for generating a restoring force along said levitating axis in one direction for levitating said specimen and for constraining said melt against pulling of fiber in an opposing direction so that said melt is stably levitated during fiber pulling.

4,565,558
APPARATUS FOR THE MANUFACTURE OF CONSTRUCTIONS IN FIBERS

Rudolf Keil, Munich, and Konrad Mathyssek, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1984, Ser. No. 642,583
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334565
Int. Cl.[4] C03B *23/08*
U.S. Cl. 65—1 19 Claims

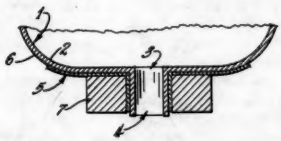


1. In an apparatus for the manufacture of constrictions in fibers, said apparatus comprising stretching means for stretching the fiber by applying a tensile force thereto and heating means for brief local heating of a stretched fiber to a softening temperature at which a permanent constriction is formed in the fiber, the tensile force produced in the fiber and the brief local heating are so matched to one another that a constriction is formed in the fiber without pulling the fiber apart, the improvements comprising the stretching means including means for limiting the stretching force of the stretching means, two exactly aligned guide means for positioning the fiber being stretched, means for spacing the two guide means a fixed distance apart and on both sides of the location of the heating means, and first and second holding means for holding and stretching the fiber with means for moving the first and second holding means relative to each other, each of the guide means having a guide groove in alignment with the guide groove of the other guide means, and said means for limiting the stretching force including a limiting force-friction lock mechanism to restrict the maximum tensile force being generated by moving the holding means apart.

4,565,559
PROTECTION DEVICE FOR BASALT DRAIN BUSHINGS

Richard A. Perkins, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 478,578, Mar. 24, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 670,464
Int. Cl.[4] C03B *37/02*
U.S. Cl. 65—2 7 Claims

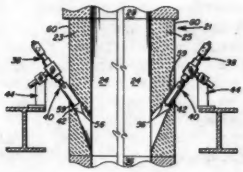


1. In a method of manufacturing glass fibers comprising electrically melting fiberizable glass forming batch in a main glass melter, supplying the melted batch to a heated platinum, or platinum alloy, bushing and forming fibers from molten glass emitted from said bushing, the improvement wherein said batch contains iron oxide in a bushing degrading amount and comprising retarding the bushing degradation by passing heat from a lower exteriorally disposed electrical heating element through an electrically insulating barrier to said bushing.

4,565,560
ENERGY EFFICIENT AND ANTI-CORROSIVE BURNER NOZZLE CONSTRUCTION AND INSTALLATION CONFIGURATION

John F. Krumwiede, and Yih-Wan Tsai, both of Allegheny County, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1984, Ser. No. 683,749
Int. Cl.[4] C03B *5/04*
U.S. Cl. 65—134 14 Claims



1. In a glassmaking furnace of the type comprising a combustion chamber, and a plurality of port tunnel structures disposed in fluid communication with the combustion chamber, an apparatus for passing fuel into the combustion chamber, comprising:

a fuel input passageway provided through a wall of at least one of said port tunnel structures;

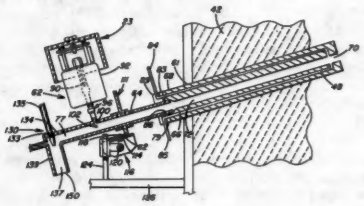
a burner nozzle extending at least partially into said fuel input passageway for delivering fuel through said fuel input passageway into the combustion chamber; and

wherein the diameter of said burner nozzle is lesser than the diameter of said fuel input passageway, to thereby provide a space between said burner nozzle and said fuel input passageway, said space being unsealed in direct communication with the ambient atmosphere about the furnace, and wherein further said space is sufficient to allow inspiration of enough ambient air to cool said burner nozzle.

4,565,561
METHOD OF AND APPARATUS FOR ANALYZING ATMOSPHERE OF A FURNACE

Robert Gagne, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 5, 1984, Ser. No. 678,425
Int. Cl.[4] C03B *5/04*
U.S. Cl. 65—135 18 Claims



6. An apparatus for monitoring the interior atmosphere of a regenerative glassmaking furnace, including:

means disposed exteriorly of the furnace for analyzing a portion of the furnace interior atosphere defined as a sample;

means for aspirating said sample from the furnace interior to said analyzing means for analysis of said sample, said aspirating means including:

a refractory adaptor block having a sample passageway extending between and through first and second ends of said adaptor block;

means for mounting said adaptor block in an outside wall of the furnace at a location such that said sample passageway communicates at one end with the interior atmosphere of the furnace;

a sample conduit fluidly connected at one end with the opposite end of said sample passageway, and at its opposite end with the furnace exterior atmosphere;

a convection pipe loop having a sample entrance end and a sample exit end disposed in fluid communication with said sample conduit at spaced points intermediate said ends of said sample conduit, at least a portion of said sample being convected through said convection pipe loop, prior to exiting said sample conduit, and past said analyzing means for analysis of said sample; and

a vacuum creating means, including:

a portion of said sample conduit located downstream of said convection pipe loop, wherein said portion is bent so as to project substantially laterally with respect to the other or unbent portion of said sample conduit;

an aperture provided through a wall of said sample conduit opposite a central portion of the interior of said bent portion; and

means for directing pressurized fluid from a source of pressurized fluid through said aperture and thence through said central portion of said bent portion interior to said furnace exterior atmosphere, to thereby create at least a partial vacuum within said sample conduit; and

wherein the pressure differential between the furnace interior and the furnace exterior is negative.

4,565,562

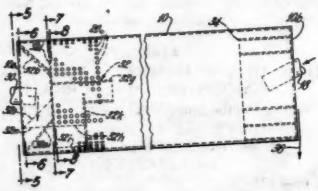
TWO-STAGE HEATING MEDIA FEEDER FOR A GLASS BATCH PREHEATING DRUM

Stephen Seng, Bladensburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 24, 1984, Ser. No. 685,431

Int. Cl.[4] C03B *3/00*

U.S. Cl. 65—335 **4 Claims**



1. A rotatable glass batch material preheating drum having a two-stage heating media feeder secured therein adjacent an apertured end plate thereof, the heating media feeder comprising a hollow frustoconical portion having a larger open end disposed adjacent said drum end plate, a circular plate disposed adjacent a smaller end of the frustoconical portion and having a diameter substantially equal to the inner diameter of said drum, the frustoconical portion being cut-away at a peripheral portion thereof to provide an opening defined by a leading edge and a trailing edge whereby once each revolution thereof heating media received therein through the aperture in said drum end plate drop through the opening to a lower inner periphery of said drum between said drum end plate and said circular plate of the feeder, a generally triangular flat wall portion aligned axially of the drum with said leading edge defining the opening in the frustoconical portion and joined along three sides thereof respectively to the frustoconical portion, the circular plate, and the drum, the circular plate being cut-away at a peripheral portion between the smaller end of the frustoconical portion and the drum to provide an opening defined by a leading edge and a trailing edge and the trailing edge defining the opening in the circular plate being aligned axially of the drum with the leading edge defining the opening in the frustoconical portion whereby during the next revolution the triangular wall portion engages the heating media at the lower periphery of the drum between the drum end plate and the circular plate of the feeder and carries them toward an upper portion of the drum wherefrom any that haven't already passed through the opening in the circular plate progress along the outer surface of the frustoconical portion and pass through the opening in the circular plate, a generally V-shaped chute for receiving the heating media from the opening in the circular plate, the chute including a pair of generally radially extending rectangular straight wall portions disposed at an acute angle with respect to each other, having outer end portions aligned with the edges defining the opening in the circular plate, and connected adjacent inner ends by a curved wall portion, the chute also including a generally arcuate plate spaced from and joined to the circular plate by the pair of straight wall portions, the arcuate plate extending between the straight wall portions, and a cylindrical nozzle having a portion aligned with the curved wall portion of the chute and adapted to carry the heating media from the chute to the inside of the drum.

4,565,563

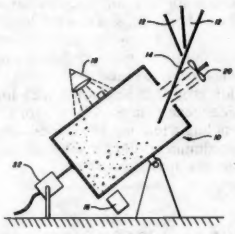
METHOD OF PRODUCING FERTILIZER PRODUCT CONTAINING SEWAGE SLUDGE

Norwood K. Talbert, 7586 Cavalry Cir., Manlius, N.Y. 13104

Continuation-in-part of Ser. No. 224,858, Jan. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 56,989, Jul. 12, 1979, abandoned, which is a division of Ser. No. 932,622, Aug. 10, 1978, abandoned. This application Jan. 14, 1985, Ser. No. 691,635

Int. Cl.[4] G05F *7/00*

U.S. Cl. 71—12 **2 Claims**



1. The method of producing a fertilizer product consisting of solid, individual, spherical or semi-spherical granules of substantially homogeneously mixed ammonium sulphate crystals and sewage sludge solids comprising the steps of:

(a) determining the approximate water content of a quantity of wet sewage sludge;

(b) placing a quantity of crystalline ammonium sulphate in a mixing vessel;

(c) adding said wet sludge to said mixing vessel at a predetermined rate; and

(d) mixing said ammonium sulphate and sewage sludge together in said vessel and driving off water from said sewage sludge continuously as said sewage sludge is added to said vessel, said water being driven off by applying heat to said mixing vessel and circulating air over the mixture therein to carry away evaporated moisture and said mixing resulting in the producing of said fertilizer product;

(e) the predetermined rate of adding the wet sludge being that rate, relative to the rate of said driving off of water, at

which rate sludge solids mix with said ammonium sulphate crystals to form individual, substantially dry, solid granules, without dissolving said ammonium sulphate crystals in the water initially contained by said wet sewage sludge.

4,565,564

COATED FERTILIZER PARTICLES

Peter S. Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Calif.

Division of Ser. No. 471,452, Mar. 7, 1983, Pat. No. 4,494,976, which is a continuation of Ser. No. 259,067, Apr. 30, 1981, abandoned. This application Oct. 15, 1984, Ser. No. 660,805

Int. Cl.[4] C05C *9/00*

U.S. Cl. 71—28 **17 Claims**

1. A method for producing free-flowing, metal-containing chemical fertilizer particles comprising the steps of:

(a) applying a coating of at least one metal oxide to said fertilizer particles;

(b) covering the metal oxide coating with molten urea; and

(c) heating the particles to a temperature below about 130° C. for a time sufficient to effect a condensation reaction between the metal oxide and urea.

4,565,565

DICHLOROACETAMIDES, HERBICIDES CONTAINING ACETANILIDES AS HERBICIDAL ACTIVE INGREDIENTS AND THE DICHLOROACETAMIDES AS ANTAGONISTS, AND THE USE OF THESE HERBICIDES IN CONTROLLING UNDESIRED PLANT GROWTH

Wolfgang Rohr, Wachenheim; Hanspeter Hansen; Peter Plath, both of Ludwigshafen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

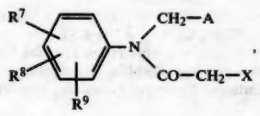
Division of Ser. No. 207,337, Nov. 17, 1980, Pat. No. 4,448,960. This application Aug. 3, 1983, Ser. No. 519,821

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948535

Int. Cl.[4] A01N *43/48, 37/18*

U.S. Cl. 71—92 **12 Claims**

1. A herbicidal agent containing, as herbicidal active ingredient, an effective amount of at least one acetanilide of the formula



(II)

where

R^7 is hydrogen or linear or branched alkyl or alkoxy of up to 5 carbon atoms,

R^8 is hydrogen, halogen or linear or branched alkyl or alkoxy of up to 5 carbon atoms,

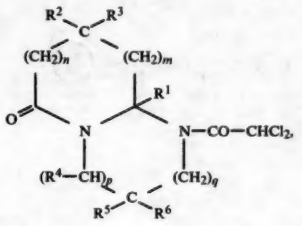
R^9 is hydrogen, halogen or linear or branched alkyl or alkoxy of up to 5 carbon atoms,

R^7 together with R^8 may also be alkylene of up to 6 carbon atoms which is ortho-linked to the benzene ring and is unsubstituted or substituted by linear or branched alkyl of up to 4 carbon atoms,

X is chlorine or bromine and

A is alkoxy or alkoxyalkyl of up to 4 carbon atoms, or is an azole radical which is bonded via a ring nitrogen and which may be monosubstituted or polysubstituted by halogen, phenyl, alkyl, alkoxy, alkylthio or perfluoroalkyl, each of up to 4 carbon atoms, cyano, carboxyl or alkoxycarbonyl, where alkoxy is of up to 4 carbon atoms, and may also be a salified azole radical if the azole ring contains 2 or 3 nitrogens,

and, as antagonist, an effective amount of at least one dichloroacetamide of the formula



(I)

where

R^1 is hydrogen, methyl or ethyl,

R^2 and R^3 are identical or different and are hydrogen, methyl or methoxy,

R^4 is hydrogen or methyl and

R^5 and R^6 are identical or different and are hydrogen or methyl, and

m is 0 or 1, n is 1 or 2, p is 0, 1 or 2 and q is 0, 1 or 2.

4,565,566

IMIDAZO-PYRROLO-PYRIDINE DERIVATIVES USEFUL AS HERBICIDAL AGENTS

Winfried Draber, Wuppertal; Ludwig Eue, Leverkusen; Hans-Joachim Santel, Cologne, and Robert R. Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

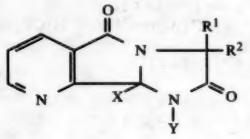
Filed Jul. 3, 1985, Ser. No. 752,214

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425124; Jun. 7, 1985, 3520390

Int. Cl.[4] A01N *43/48;* C07D *487/00;* C07F *7/02*

U.S. Cl. 71—92 **9 Claims**

1. An imidazo-pyrrolo-pyridine derivative of the formula



in which

R^1 and R^2 each independently is alkyl with C_1-C_8 carbon atom,

X is cyano, alkoxycarbonyl with C_1-C_8 carbon atoms or aminocarbonyl, and

Y is hydrogen or, if X is cyano, may also be trimethylsilyl.

8. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

4,565,567

HERBICIDAL HETEROCYCLIC ALKYLAMINOCARBONYLSULFONAMIDES

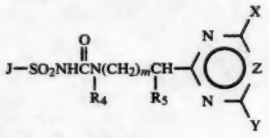
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 472,879, Mar. 14, 1983, Pat. No. 4,496,392, which is a continuation-in-part of Ser. No. 377,371, May 12, 1982, abandoned. This application Dec. 6, 1984, Ser. No. 678,881

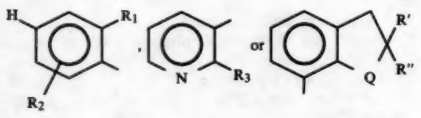
Int. Cl.[4] C07D *239/42, 239/47;* A01N *47/28*

U.S. Cl. 71—92 **19 Claims**

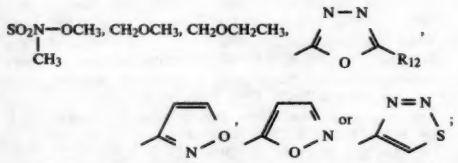
1. A compound of the formula:



wherein
J is



R_1 is NO_2, F, Cl, Br, CF_3, C_1–C_3 alkyl, $CH_2CH_2OCH_3$, CO_2R_6, $S(O)_nR_7$, $SO_2NR_8R_9$, SCF_2H, OR_{10}, OSO_2R_{11},



R_2 is H;
R_3 is Cl, SO_2CH_3 or $SO_2N(CH_3)_2$;
R_4 and R_5 are independently H or CH_3;
R_6 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CH_2CH_2Cl or $CH_2CH_2OCH_3$;
R_7 is C_1–C_3 alkyl or $CH_2CH{=}CH_2$;
R_8 is CH_3;
R_9 is C_1–C_3 alkyl;
R_{10} is C_1–C_3 alkyl, CF_2H or $CH_2CH_2OCH_3$;
R_{11} is C_1–C_3 alkyl;
R_{12} is H or CH_3;
n is 0 or 2;
m is 0;
Q is O, S or SO_2;
R′ is H or CH_3;
R″ is H or C_1–C_3 alkyl;
Z is CH;
X is CH_3 or OCH_3;
Y is CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$ or

provided that
(1) R_4 and R_5 cannot simultaneously be CH_3; and
(2) when X and Y are both CH_3 then R_1 must be other than NO_2, $S(O)_nR_7$ or C_1–C_3 alkyl;
and their agriculturally suitable salts.

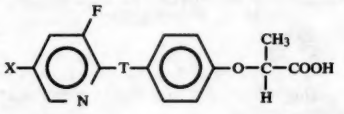
4,565,568

PYRIDYL(OXY/THIO)PHENOXY COMPOUNDS, HERBICIDAL COMPOSITIONS AND METHODS

Howard Johnston, Walnut Creek, and Lillian H. Troxell, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

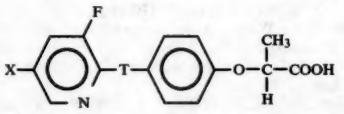
Continuation-in-part of Ser. No. 389,840, Jun. 18, 1982, abandoned. This application May 23, 1983, Ser. No. 497,295
Int. Cl.[4] C07D *213/64;* A01N *43/40*
U.S. Cl. 71—94 **12 Claims**

1. A compound having herbicidal activity and having the formula



wherein X is CF_3, CHF_2, $CClF_2$, Br or Cl and T is O or S, or a resolved "R" enantiomer thereof, and the agriculturally acceptable salts, esters, and mono- or disubstituted or unsubstituted lower alkyl and phenyl amides thereof, wherein the substituents are selected from lower alkyl, lower alkoxy, halo, cyano, nitro, hydroxy, amino or carboxyl.

9. A composition comprising an inert carrier in admixture with a herbicidally effective amount of a compound having the formula



wherein X is CF_3, CHF_2, $CClF_2$, Br or Cl and T is O or S, or a resolved "R" enantiomer thereof, and the agriculturally acceptable salts, esters and mono- or disubstituted or unsubstituted lower alkyl and phenyl amides thereof, wherein the substituents are selected from lower alkyl, lower alkoxy, halo, cyano, nitro, hydroxy, amino or carboxyl.

4,565,569

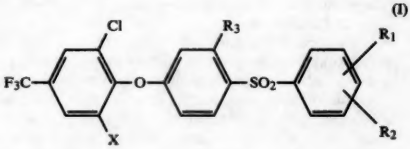
DIPHENYL SULFONE COMPOUNDS, AND THEIR PRODUCTION AND USE

Hiroyuki Konishi, Sakai; Naganori Hino; Hiroshi Matsumoto, both of Toyonaka, and Ryo Yoshida, Kawanishi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 441,381, Nov. 12, 1982. This application May 13, 1983, Ser. No. 494,453
Claims priority, application Japan, May 14, 1982, 57-81750; Aug. 6, 1982, 57-137790
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.
Int. Cl.[4] B21H *3/04;* C07C *147/107, 121/50*
U.S. Cl. 71—103 **17 Claims**

1. A diphenyl sulfone compound of the formula:

(I)



wherein R_1 and R_2 are, same or different, each a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy

group, a lower alkenyloxy group, a lower alkynyloxy group, a phenoxy group, a lower alkylthio group, a lower alkylsulfonyl group or a lower alkoxycarbonyl(lower)alkoxy group, R_3 is a hydroxyl group, a lower alkenyloxy group, a lower alkynyloxy group, a halo(lower)alkoxy group, a dihalo(lower)alkoxy group, a lower alkoxy(lower)alkoxy group, a cyano(lower)alkoxy group, a lower alkoxycyano(lower)alkoxy group, a hydroxy(lower)alkoxy group, a lower alkylcarbonyloxy group, a lower alkoxycarbonyl group, a lower alkylthio(lower)alkoxy group, a lower alkenyloxy(lower)alkoxy group, a di(lower)alkylamino(lower)alkoxy group, a hydroxyimino(lower)alkoxy group, a lower alkoxyimino(lower)alkoxy group, a lower alkylsulfonyloxy group, a lower alkoxycarbonyloxy group, a di(lower)alkoxyphosphinyloxy group, an oxotetrahydrofuranyloxy group, a tetrahydropyranyloxy group, a lower alkyl-1,3-oxolanyl(lower)alkoxy group or a group of the formula: —O—A—COR_4 (in which A is lower alkylene, lower alkenylene, lower alkyleneoxy, halo(lower)alkylene or lower alkoxy(lower)alkylene and R_4 is hydroxyl, lower alkyl, halo(lower)alkyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, halo(lower)alkoxy, lower alkoxy(lower)alkoxy, cyano(lower)alkoxy, lower alkoxycarbonyl(lower)alkoxy, di(lower)alkylamino, N-(α-lower alkyl(lower)alkylidene)aminoxy or lower alkylthio) and X is a hydrogen atom or a halogen atom.

4,565,570

ARYLACRYLARYL AMIDES HERBICIDAL COMPOUNDS AND METHODS OF USE

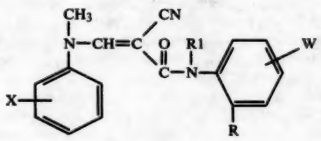
Jeff K. Curtis, Berkeley, and William J. Michaely, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 560,367, Dec. 12, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 710,195

Int. Cl.⁴ A01N *37/34*; C07C *121/78*

U.S. Cl. 71—105 **35 Claims**

1. A compound having the structural formula



wherein

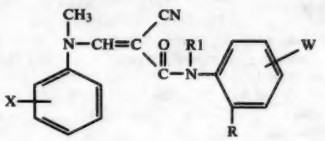
R is selected from the group consisting of fluorine, chlorine, bromine, iodine, methyl, ethyl, ethenyl, ethinyl, carboxaldehyde, methoxy, nitro, trifluoromethyl, cyano, —S-$(O)_nCH_3$ where n is 0, 1 or 2; —NH_2, —$NHCH_3$, —$N(CH_3)_2$ and —SO_2NH_2, provided that when R is hydrogen, W must be hydrogen and that when R is chlorine, W cannot be 4- or 6-chlorine;

R_1 is selected from the group consisting of hydrogen, C_1–C_3 alkyl or allyl;

W is selected from the group consisting of fluorine, chlorine, bromine, iodine, trifluoromethyl, methyl, C_1–C_3 thioalkyl, —$NHC(O)CH_3$ and methoxy provided that methoxy is not 4-methoxy; and

X is selected from the group consisting of 2- or 3-fluorine, chlorine, bromine, iodine, thiomethyl, methyl and hydrogen.

19. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein

R is selected from the group consisting of fluorine, chlorine, bromine, iodine, methyl, ethyl, ethenyl, ethinyl, carboxaldehyde, methoxy, nitro, trifluoromethyl, cyano, —S-$(O)_nCH_3$ where n is 0, 1 or 2; —NH_2, —$NHCH_3$, —$N(CH_3)_2$ and —SO_2NH_2, provided that when R is hydrogen, W must be hydrogen and that when R is chlorine, W cannot be 4- or 6-chlorine;

R_1 is selected from the group consisting of hydrogen, C_1–C_3 alkyl or allyl;

W is selected from the group consisting of fluorine, chlorine, bromine, iodine, trifluoromethyl, methyl, C_1–C_3 thioalkyl, —$NHC(O)CH_3$ and methoxy provided that methoxy is not 4-methoxy; and

X is selected from the group consisting of a 2- or 3-fluorine, chlorine, bromine, iodine, thiomethyl, methyl and hydrogen.

4,565,571

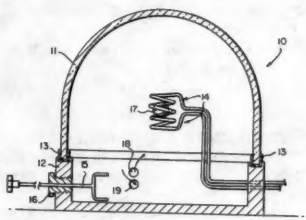
METHOD FOR PRODUCING LOW DENSITY POROUS METALS OR HOLLOW METALLIC SPHERES

Gholamreza J. Abbaschian, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed Sep. 22, 1983, Ser. No. 534,655

Int. Cl.⁴ C22B *4/00*

U.S. Cl. 75—0.5 C **24 Claims**



1. A method for the production of a low density, porous metallic structure comprising:

(a) forming from a particulate material containing at least one electrically conductive metal a porous article of sufficient green strength to be substantially self-supporting,

(b) subjecting said green porous article to an electromagnetic field which (i) has a field strength and frequency sufficient to exert a force in a direction such that the force of grvity acting on said green article is counterbalanced thereby levitating it in space, and (ii) has a frequency sufficient to induce an eddy current in said article of such intensity that the dissipation thereof produces sufficient heat to melt said electrically conductive metal, thereby entrapping the pores of said green article and any gases or non-electrically conductive particulate material contained therein, and

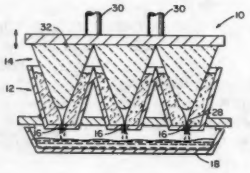
(c) cooling said article at a rate sufficient to solidify said molten metal and produce a low density, porous metal structure containing pores which contain any entrapped gases or non-electrically conductive particulate material.

4,565,572

PROCESS FOR RECOVERING METAL FROM ALUMINUM DROSS

Jan H. L. van Linden, Allison Park, Pa., and James S. Whitehead, Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 29, 1984, Ser. No. 676,435
Int. Cl.[4] C22B *21/00*
U.S. Cl. 75—24 16 Claims



1. A method for the recovery of free aluminum metal from hot aluminum dross which forms on the surface of molten aluminum during aluminum melting operations, said dross containing free aluminum metal and a solids network, said method comprising the steps of:

(a) charging the hot dross from the aluminum melting operation into a receptacle having at least one inclined sidewall and at least one passageway extending through the bottom of the receptacle, said bottom passageway being sized and configured to permit the passage of free aluminum and inhibit the passage of said solids network;

(b) mechanically compacting the dross with a heated ram, said compacting applying a compressive force on the dross towards the inclined sidewall such that a substantial portion of the free aluminum separates from the dross and passes through the bottom passageway;

(c) maintaining the temperature of the hot dross during its collection in the receptacle and subsequent mechanical compaction so as to enhance the removal of free aluminum therefrom; and

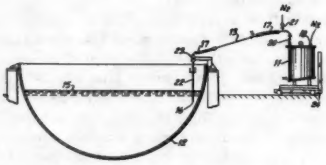
(d) collecting the free aluminum metal which passes through the bottom passageway.

4,565,573

PURIFICATION OF MOLTEN LEAD

Richard D. Symonds; Joseph E. Clapp, both of Salem, and Kenneth Buckley, Viburnum, all of Mo., assignors to Amax Inc., Greenwich, Conn.

Filed Apr. 22, 1985, Ser. No. 725,713
Int. Cl.[4] C22B *13/00*
U.S. Cl. 75—77 2 Claims



1. The process for recovering lead from lead dross which comprises the steps of

(1) establishing a bath of molten lead in a heated vessel, said molten lead bath having a surface,

(2) introducing molten sodium at a point sufficiently below said lead bath surface that said sodium alloys with said lead and does not escape from said bath, said sodium becoming alloyed with said lead up to about 1%, by weight, of said molten lead,

(3) placing preheated lead dross upon the surface of said alloyed molten lead bath

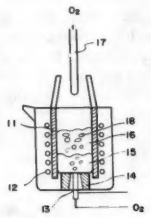
(4) reacting said molten lead alloy with said dross to remove sulfur from said dross, recover the lead content of said dross in said bath and thereby utilize substantially all the sodium content of said alloyed lead bath.

4,565,574

PROCESS FOR PRODUCTION OF HIGH-CHROMIUM ALLOY BY SMELTING REDUCTION

Hiroyuki Katayama; Hidetake Ishikawa; Masatoshi Kuwabara; Chikara Saito; Tuneyuki Inoue, and Masaki Fujita, all of Fukuokaken, Japan, assignors to Nippon Steel Corporation, Otemachi and Japan Metals and Chemicals Co., Ltd., Tokyo, both of, Japan

Filed Nov. 19, 1984, Ser. No. 673,174
Int. Cl.[4] C22C *33/00*
U.S. Cl. 75—130.5 8 Claims



1. A process for the smelting reduction of chromium ore or chromium oxide, comprising the step of pre-reducing said chromium ore or chromium oxide thereby obtaining a partially reduced product and the step of supplying said partially reduced chromium ore or chromium oxide, carbonaceous material, flux and oxidative gas to a top and bottom blowing converter thereby effecting smelting reduction of said partially reduced chromium ore or chromium oxide, wherein said step for the smelting reduction of chromium ore or chromium oxide is divided into two stages, i.e. the first stage for supplying said partially reduced chromium ore or chromium oxide, in conjunction with said carbonaceous material and said flux, into said top and bottom blowing converter, blowing said oxidative gas through a top blowing lance and blowing said oxidative gas and inactive gas, through a bottom blowing tuyere into a molten metal formed in said converter and, in the meantime, keeping the temperature of said molten metal below 1,650° C. and controlling the amounts of the materials supplied through said bottom blowing tuyere into said molten metal so that the ratio of the volume of the gas generated by said materials to the total weight of said molten metal and slag will fall in the range of 100 to 2,500 [Nl/min.t] and the second stage for discontinuing the supply of the materials including said partially reduced chromium ore or chromium oxide, keeping the temperature of said molten metal below 1,650° C., controlling the amounts of said materials supplied through said bottom blowing tuyere into said molten metal so that the ratio of the volume of the gas generated by said materials to the total weight of said molten metal and slag will fall in the range of 100 to 1,800 [Nl/min.t], supplying said carbonaceous material so as to give free carbonaceous material in an amount, C_F, satisfying the following formula:

$$\frac{C_F}{\text{Amount of slag}} \geq 20 \text{ kg/t}$$

wherein $C_F = W_c - 0.54\ [(\bar{a}+\bar{b})/100]V$, W_c standing for the accumulative value (kg) of the carbon content of the carbonaceous material supplied, $\bar{a}$ and $\bar{b}$ each of the integral averages of CO% and CO_2% in the waste gas composition, and V for

the flow volume of the waste gas (Nm^3), and supplying CaO and other substances so as to give a slag composition satisfying the following formulas

$$\frac{(CaO\ \%) + 1.39\ (MgO\ \%)}{(SiO_2\ \%) + 1.18\ (Al_2O_3\ \%)} = 0.7 \text{ to } 1.5$$

$$(\%\ Al_2O_3) \leqq 25\%.$$

4,565,575

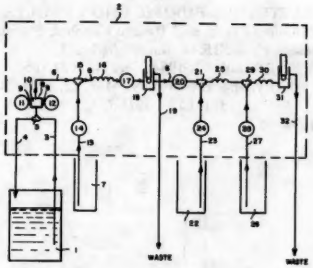
APPARATUS AND METHOD FOR AUTOMATICALLY MAINTAINING AN ELECTROLESS PLATING BATH

William J. Cardin, Merrimack, N.H.; Michael Gulla, Sherborn, Mass., and Charles L. Newton, Clearwater, Fla., assignors to Shiplay Company Inc., Newton, Mass.

Filed Nov. 2, 1984, Ser. No. 667,738

Int. Cl.⁴ C23C *3/02*

U.S. Cl. 106—1.22 **6 Claims**



1. In a method for automatically maintaining consumable components of an electroless metal plating solution at predetermined concentration in a plating tank while workpieces are being processed in the tank comprising the steps of:

withdrawing a sample stream of the plating solution from the tank at a predetermined constant rate and passing the sample stream through a sequence of analyzing stations to a point of discharge; and subjecting the stream to analysis of the consumable components of the plating solution; the improvement comprising

introducing a plating solution poison capable of inhibiting the plating of metal from solution into the sample stream at a predetermined rate.

4,565,576

PRINTING INK OF NEW TYPE AND PROCESS FOR PREPARING SAME

Vilmos Salgó; József Hanzély; Anna Baross née Sipöcz, and István Geri, all of Budapest, Hungary, assignors to Budacolor Festekgyar, Budapest, Hungary

Filed Oct. 29, 1982, Ser. No. 437,672

Claims priority, application Hungary, Dec. 30, 1981, 3190/81

Int. Cl.⁴ C09D *11/02*

U.S. Cl. 106—23 **5 Claims**

1. A printing ink which comprises pigment(s) dispersed in a fluid vehicle phase, wherein two pigments of different particle size are present, the average particle size of one pigment being 0.1 to 0.9 μm and its amount, related to the total ink weight, being 3 to 27% by weight, the average particle size of the other pigment being 2 to 15 μm, and its amount, related to the total ink weight, being 4 to 37% by weight.

4,565,577

POLLUTANT-RESISTANT SEALING COMPOSITION

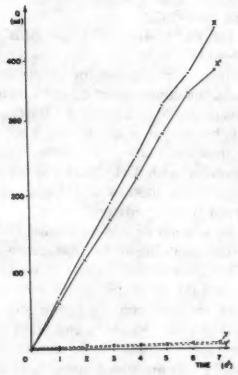
Rudolf Burkhardt, Troisdorf, and Hansjürgen Hass, Troisdorf-Spich, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Jul. 24, 1984, Ser. No. 634,317

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326836

Int. Cl.⁴ C04B *7/00*

U.S. Cl. 106—85 **5 Claims**



1. A pollutant-resistant composition for sealing walls and other soil barriers comprising expandable clay minerals present in an amount of 1 to 8 wt.-% of the composition, hydraulic binding agents settable by water without activators, fillers and water, a trialkoxysilane of the formula R—Si(OR')$_3$ in an amount of 0.5 to 5 wt.-% with respect to the solid content of the composition, in which R represents an aliphatic moiety having 2 to 6 carbon atoms and R' is hydrogen or identical or different alkyl moieties of 1 to 4 carbon atoms, or their hydrolysis products, and alkali aluminates in such amounts that their Al_2O_3 content corresponds to 0.01 to 1.5 wt.% of the solid content of the composition.

4,565,578

GAS GENERATION RETARDED ALUMINUM POWDER FOR OIL FIELD CEMENTS

David L. Sutton, and John F. Burkhalter, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 26, 1985, Ser. No. 705,599

Int. Cl.⁴ C04B *7/02*

U.S. Cl. 106—87 **20 Claims**

13. A method of forming a gas generation retarded oil field cement comprising the steps of:

dry blending a hydraulic cement with an essentially dry gas generation retarded aluminum powder to form a mixture thereof, said gas generation retarded aluminum powder being formed by:

dissolving an effective amount of an aluminum reaction rate retarder in an organic solvent, said retarder being selected from the group consisting of sorbitan monooleate, glycerol monoricinoleate, sorbitan monoricinoleate, sorbitan monotallate, pentaerythritol monoricinoleate, sorbitan monoisostearate, glycerol monostearate, sorbitan monostearate and mixtures thereof;

mixing aluminum powder with the resulting solution whereby said aluminum powder is wetted with said solution; and then

drying said aluminum powder by vacuum evaporating and removing said organic solvent therefrom; and

mixing said cement retarded aluminum powder mixture with

a sufficient amount of water to form a pumpable cement slurry.

4,565,579

NONEXPLOSIVE CHEMICAL COMPOSITION FOR GENTLY BREAKING ROCK OR CONCRETE MASS

Isami Fujioka; Kazutoshi Imada; Motoyasu Nishimura, and Takayuki Ishibashi, all of Ube, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Oct. 26, 1983, Ser. No. 545,695

Claims priority, application Japan, Oct. 28, 1982, 57-188238; Jul. 22, 1983, 58-132822

Int. Cl.[4] C04B *2/02, 7/34;* B02C *19/00*

U.S. Cl. 106—118 14 Claims

1. A chemical composition for gently breaking a rock or concrete mass, the composition comprising a principal component which is prepared by calcining a starting mixture comprising 100 parts by weight of quick lime, 1 to 20 parts by weight of calcium fluoride and an additional fluoride which gives CaF_2 by reaction with CaO, said calcining performed at a temperature of from about 800° C. to about 1400° C. to produce a sintered starting mixture;

wherein the amount of said additional fluoride in said starting mixture is sufficient to produce an additional amount of CaF2 of from 0.5 to 10 parts by weight per 100 parts by weight of said quick lime, and wherein said additional fluoride is selected from the group consisting of NaF, KF, AlF_3, NH_4F, HF, Na_3AlF_6 and Na_2SiF_6.

11. A chemical composition for gently breaking a rock or concrete mass, the composition comprising a principal component which is prepared by calcining a starting mixture comprising 100 parts by weight of quick lime and 1 to 20 parts by weight of calcium fluoride at a temperature of from about 800° C. to about 1400° C. to produce a sintered starting mixture, said composition further comprising a hydration retarding agent which is selected from the group consisting of glycine, alanine, valine, leucine, aspartic acid, glutamic acid, lysine, arginine, methionine, cystine, cystein and phenylalanine, and salts thereof, in amounts to up to 10% by weight of said principal component.

4,565,580

SUBSTRATE CONSISTING OF REGENERATED COLLAGEN FIBRILS AND METHOD OF MANUFACTURING SAME

Teruo Miyata, Tokyo, and Shinichi Namiki, Ome, both of Japan, assignors to Koken Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1984, Ser. No. 586,944

Claims priority, application Japan, Mar. 10, 1983, 58-39597

Int. Cl.[4] C08L *89/00*

U.S. Cl. 106—124 9 Claims

1. A collagen-containing substrate in the shape of a microsphere, said microsphere comprising irregularly entangled regenerated collagen fibrils having a diameter of 10–1000 mμ and an aqueous solution existing between the regenerated collagen fibrils, the content of the regenerated collagen fibrils being 20–0.01 wt. %.

4,565,581

NACREOUS PIGMENTS HAVING IMPROVED LIGHT FASTNESS, THEIR PREPARATION AND USE

Horst Bernhard, Schwarzenberg, Austria, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,048

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151343

Int. Cl.[4] C08K *7/18;* C09C *3/06*

U.S. Cl. 106—308 B 21 Claims

1. Nacreous pigments having improved light fastness comprising mica platelets whose surfaces are coated with a layer comprising titanium dioxide and which are coated with a thin top layer comprising manganese oxide, wherein the amount of manganese oxide is about 0.05–0.5% by weight, relative to total pigment weight.

4,565,582

LACTULOSE PURIFICATION PROCESS

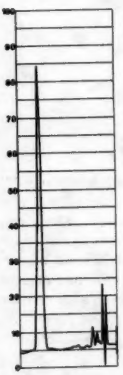
Andrea Filippini, Prato, and Renato Carobbi, Pistoia, both of Italy, assignors to SIRAC S.p.A., Milan, Italy

Filed Jul. 16, 1984, Ser. No. 631,105

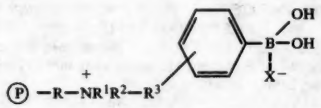
Claims priority, application Italy, Mar. 22, 1984, 20176 A/84

Int. Cl.[4] C13D *3/12*

U.S. Cl. 127—46.1 7 Claims



1. a process for purifying lactulose from other carbohydrates, comprising: passing an aqueous lactulose solution containing 5–40% of carbohydrates through one or more columns containing a bifunctionalized boron resin of the formula



(I)

in which

Ⓟ is a polyacrylic or polystyrene matrix

R and R^3, are the same or different,

and have the formula $-(CH_2)_n-$

wherein n is between 0 and 5

R^1 and R^2 are the same or different, and have the formula C_1–C_5 alkyl and

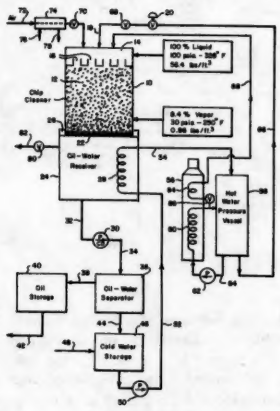
X^- is an anion selected from the group consisting of hydroxyl and halides.

4,565,583

PROCESS FOR REMOVING OIL FROM METAL CHIPS

Henry J. Venetta, Trumull County, Ohio, assignor to Inductotherm Corporation, Rancocas, N.J.

Filed Apr. 24, 1984, Ser. No. 603,503
Int. Cl.[4] B08B 3/04
U.S. Cl. 134—12 37 Claims



1. A process for removing oil from metal chips with an aqueous stream comprising disposing a bed of metal chips coated with oil within a pressure vessel provided with inlet conduit means and discharge opening means, passing through said inlet conduit means a continuous stream of liquid feed water at a superatmospheric pressure sufficiently high to maintain the water in said inlet conduit means substantially in the liquid phase, passing said stream of water into said vessel and through said bed of metal chips, the temperature and velocity of the water being sufficiently high to remove oil from the chips without substantial vaporization of said oil or said liquid water, maintaining a superatmospheric pressure within said vessel, said oil being removed from said chips and forming an oil-water mixture, and continously removing said oil-water mixture from said vessel through said discharge opening means.

4,565,584

METHOD OF PRODUCING SINGLE CRYSTAL FILM UTILIZING A TWO-STEP HEAT TREATMENT

Masao Tamura, Tokorozawa; Makoto Ohkura, Hachioji; Masanobu Miyao, Tokorozawa; Nobuyoshi Natsuaki, Kodaira; Naotsugu Yoshihiro, Matsudo; Takashi Tokuyama, Higashikurume, and Hiroshi Ishihara, Ohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

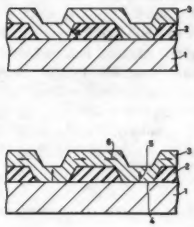
Filed Jan. 25, 1983, Ser. No. 460,801
Claims priority, application Japan, Jan. 29, 1982, 57-11635
Int. Cl.[4] H01L 21/263, 21/205
U.S. Cl. 148—1.5 8 Claims

1. A method of producing a single crystal film, comprising:

(1) the step of depositing an insulating film which has a desired plane shape, on a surface of a single crystal substrate,

(2) the step of depositing an amorphous or polycrystalline film in an atmosphere of ultra-high vacuum, said film continuously covering exposed surface parts of said single crystal substrate and said insulating film, and

(3) the step of turning said amorphous or polycrystalline film into a single crystal by solid phase epitaxial growth, said step of turning including a first heat treatment, at a temperature of not lower than approximately 200° C., which is conducted in the ultra-high vacuum atmosphere, and a second heat treatment, at a temperature of approximately



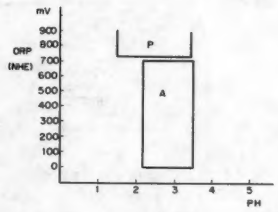
500°–1000° C., which is conducted in a non-oxidizing atmosphere.

4,565,585

METHOD FOR FORMING A CHEMICAL CONVERSION PHOSPHATE FILM ON THE SURFACE OF STEEL

Shigeki Matsuda, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 16, 1984, Ser. No. 641,484
Claims priority, application Japan, Aug. 19, 1983, 58-152150
Int. Cl.[4] C23F 7/10
U.S. Cl. 148—6.15 R 10 Claims



1. A method of forming a chemical conversion phosphate film on the surface of steel parts comprising the steps of:

(a) bringing said steel parts into contact with a conversion bath containing materials participating in the chemical conversion reactions, including a conversion-coating agent, an oxyacid anions, and an oxidizer, and maintaining the conversion bath within the range of from 0° C. to 40° C.;

(b) predetermining a hydrogen-ion concentration (pH) of the conversion bath in the range of from pH 2.2 to pH 3.5 and oxidation reduction potential (ORP) of the conversion bath in a range of from 0 mV to 700 mV (normal hydrogen electrode potential), so that concentrations of said materials is controlled and maintained to form said chemical conversion phosphate film on the surface of the steel parts, and further, that said pH an ORP ranges in combination with said temperature range produce, in step (a), a relationship between the concentration of said oxidizer said ORP, indicating at a given ORP value of the concentration of said oxidizer;

(c) measuring the hydrogen-ion concentration of the conversion bath during the step (a);

(d) measuring an oxidation reduction potential (ORP) of said conversion bath during the step (a);

(e) replenishing a main agent containing phosphate ions, when the measured pH rises above a value predetermined within said range of pH 2.2 to 3.5;

(f) replenishing said oxidizer, when the measured ORP de-

creases to less than a value predetermined within said range of 0 to 700 mV;

(g) when, due to an increase in a relative amount of the oxyacid anions to conversion-coating agents, said measured pH value falls below a value predetermined within said range of pH 2.2 to 3.5, replenishing alkali and thereby removing the oxyacid anions by added alkali, and maintaining concentrations of said materials to form said chemical conversion phosphate film;

(h) repeating replenishing steps (e), (f), and (g) during the step (a) as required, thereby maintaining said concentrations of materials during the chemical conversion of steel parts.

4,565,586

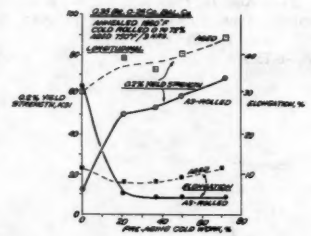
PROCESSING OF COPPER ALLOYS

Nathan L. Church, Chagrin Falls; W. Raymond Cribb, Mentor, and John C. Harkness, Lakewood, all of Ohio, assignors to Brush Wellman Inc., Cleveland, Ohio

Filed Jun. 22, 1984, Ser. No. 623,463

Int. Cl.[4] C22F *1/08*

U.S. Cl. 148—12.7 C **6 Claims**



1. The method for producing copper beryllium alloy material made from an alloy consisting essentially of about 0.05% to about 0.5% beryllium, about 0.05% to about 0.5% cobalt and the balance essentially copper which comprises providing said alloy in a wrought intermediate form, solution treating said alloy at a temperature between about 1450° F. (790° C.) and about 1850° F. (1000° C.) for a time sufficient to effect recrystallization and solid solution of that portion of the alloying elements capable of contributing to precipitation hardening, final cold working the solution treated alloy to at least about 70% reduction in area and aging the cold worked alloy at a temperature in the range of about 600° F. (315° C.) to about 1000° F. (540° C.) for less than one to about 8 hours to effect precipitation hardening with accompanying substantial increase in stress relaxation resistance, formability, ductility, conductivity and strength.

4,565,587

PERMANENT MAGNET ALLOY

Kalatur S. V. L. Narasimhan, Monroeville, Pa., assignor to Crucible Materials Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 468,903, Feb. 23, 1983, abandoned. This application Dec. 23, 1983, Ser. No. 564,667

Int. Cl.[4] C04B *35/00*

U.S. Cl. 148—31.57 **2 Claims**

1. A permanent magnet of R_2Co_{17} type crystal structure consisting essentially of in percent by weight samarium 25.1, cobalt 48.7, copper 3.9, iron 19.7 and zirconium 2.6, said magnet having been formed by cold isostatic pressing.

4,565,588

METHOD FOR DIFFUSION OF IMPURITIES

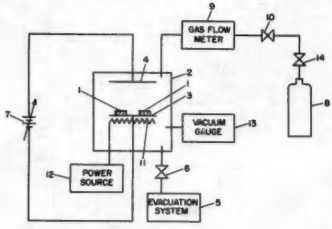
Yasukazu Seki, Tokyo, and Noritada Sato, Yokosuka, both of Japan, assignors to Fuji Electric Corporate Research and Development Ltd., Japan

Filed Oct. 10, 1984, Ser. No. 659,360

Claims priority, application Japan, Jan. 20, 1984, 59-8795

Int. Cl.[4] H01L *21/385*

U.S. Cl. 148—186 **18 Claims**



1. A method for diffusion of a desired impurity into a semiconductor substrate, wherein said impurity is capable of acting as a donor or acceptor in a semiconductor, which comprises introducing the impurity into a liquid of high volatility in which the impurity is highly soluble, applying the resultant solution to the semiconductor substrate, drying the semiconductor substrate, and exposing the dried semiconductor substrate to an inactive gas plasma at a temperature less than 300° C., thereby diffusing the impurity into said semiconductor substrate.

4,565,589

NICKEL/TITANIUM/COPPER SHAPE MEMORY ALLOY

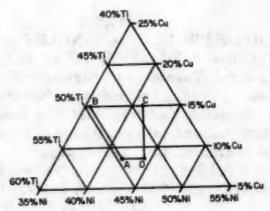
John D. Harrison, Watsonville, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 355,274, Mar. 5, 1982, abandoned. This application Sep. 28, 1983, Ser. No. 537,316

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.[4] C22C *19/03*

U.S. Cl. 148—402 **4 Claims**



1. A shape memory alloy consisting essentially of nickel, titanium, and copper within an area defined on a nickel, titanium, and copper ternary composition diagram by a quadrilateral with its first vertex at 42.5 atomic percent nickel, 50.0 atomic percent titanium, and 7.5 atomic percent copper; its second vertex at 36.0 atomic percent nickel, 50.0 atomic percent titanium, and 14.0 atomic percent copper; its third vertex at 41.5 atomic percent nickel, 44.5 atomic percent titanium, and 14.0 atomic percent copper, and its fourth vertex at 44.75 atomic percent nickel, 47.75 atomic percent titanium, and 7.5 atomic percent copper.

4,565,590

SILVER AND METAL OXIDES ELECTRICAL CONTACT MATERIAL AND METHOD FOR MAKING ELECTRICAL CONTACTS

Joachim Grosse, Erlangen; Güenter Tiefel, Fuerth, and Wolfgang Haufe, Hessdorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich

Filed Jan. 23, 1985, Ser. No. 693,717

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1984, 3403115; Jul. 30, 1984, 3428070

Int. Cl.[4] C22C *1/05, 5/06, 32/00;* H01H *1/02*

U.S. Cl. 148—431 18 Claims

1. A material for electrical contacts, comprising:

5–20 percent by mass SnO_2;

0.1–5 percent by mass Ta_2O_5;

0.1–5 percent by mass CuO;

0.1–5 percent by mass Bi_2O_3; and

the balance being substantially silver.

13. A method for making electrical contact studs, comprising: processing the material of claim 1 in powder form; pressing the material; sintering the material; repressing the material; and producing the material in a ribbon-shaped form.

4,565,591

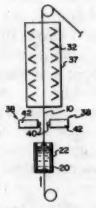
METHOD AND APPARATUS FOR MAKING A MAGNETICALLY LOADED INSULATED ELECTRICAL CONDUCTOR

Michael A. Shannon, Glenburnie, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 6, 1984, Ser. No. 597,647

Int. Cl.[4] H01B *13/06*

U.S. Cl. 156—51 15 Claims



1. A method of making an insulated electrical conductor comprising a solid conductor having an insulation layer formed from a dielectric carrier provided with a plurality of magnetically permeable particles homogeneously dispersed therein, wherein said method comprises applying the layer to the solid conductor with the dielectric carrier in fluid form and passing the solid conductor along a feedpath and axially through the windings of a coil which is energized to create a magnetic field and the field causes an increase in magnetization of magnetic domains of the particles towards the axial direction of the conductor while maintaining the particles homogeneously dispersed.

4,565,592

AUTOMATED MANUFACTURING MONITORING

Rick Wehrmann, Twinsburg, and Robert Haby, Stow, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Jul. 2, 1984, Ser. No. 626,731

Int. Cl.[4] B65H *23/18*

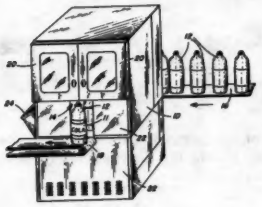
U.S. Cl. 156—64 23 Claims

1. A process where one or more operations are repetitively performed on a connected series of like objects, said process inlcuding the steps of:

moving said objects in turn to a first work station

and separating a first of said objects from the series;

monitoring the separation of said first object in anticipation of performing said one or more operations;



moving said first object along a path of travel based upon said monitoring step to a second work station; and

performing said one or more operations on said object.

4,565,593

CONNECTION AND INSPECTION OF OPTICAL FIBRES BY FUSION SPLICING

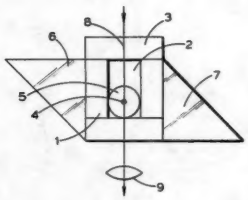
Donald Marr, Ufford, Great Britain, assignor to British Telecommunications, London, England

Filed Oct. 5, 1983, Ser. No. 539,166

Claims priority, application United Kingdom, Oct. 8, 1982, 8228877

Int. Cl.[4] B65H *69/06*

U.S. Cl. 156—64 20 Claims



17. A method of connecting and inspecting the tail ends of two optical fibers, each fiber having a core and a cladding, said method comprising the steps of:

(a) fusion splicing at least the cores of said fiber tail ends;

(b) adhesively assembling the resulting fused splice and adjacent portions of the two optical fibers within a transparent support member having generally planar opposed first and second side faces, each face being generally parallel to the longitudinal axis of the spliced fiber, using a transparent adhesive approximately matched in refractive index to the refractive index of the fiber cladding; and

(c) transmitting light transversely through said spliced fiber by passing it into said first side face of the assembly and out of said second opposite side face and forming an image of said fused splice using said transmitted light.

4,565,594

LOW NOISE CABLE CONSTRUCTION

Horst Kuettner, Huntington, N.Y., assignor to Thermax Wire Corporation, Flushing, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,566

Int. Cl.[4] H01B *13/00*

U.S. Cl. 156—47 1 Claim

1. The method of manufacturing a low noise electrical cable including at least one centrally disposed conductor, a dielectric sleeve and an outer conductive sheath which includes the steps of shorting the sheath to the conductor, and while maintaining the short, subjecting the cable to temperatures below the melt-

ing point of the dielectric and above any transition points for a period of time sufficient to completely change all crystalline

structure of the material of the dielectric to amorphous state, and gradually reducing the temperature of the cable to room temperature.

4,565,595

METHOD OF MAKING COMPOSITE AIRCRAFT WING

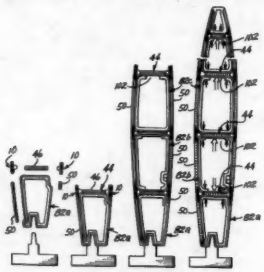
Philip C. Whitener, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US83/00893, § 371 Date Jun. 6, 1983, § 102(e) Date Jun. 6, 1983, PCT Pub. No. WO84/04905, PCT Pub. Date Dec. 20, 1984

Continuation-in-part of Ser. No. 333,247, filed as PCT US81/01319, Sep. 30, 1981, published as W083/01238, Apr. 14, 1983, § 102(e) date Sep. 30, 1981, Pat. No. 4,395,450. This PCT application Jun. 6, 1983, Ser. No. 514,283

Int. Cl.⁴ B64C *3/18*; B32B *5/00*

U.S. Cl. 156—156 **8 Claims**



1. A method of preparing a contoured composite structure, with steps comprising: wrapping resin impregnated nonmetallic reinforcing fibers around a plastic covering on each of a series of individually contoured elongated mandrels, arranging the wrapped mandrels in a line and in spaced relation to each other, locating a pair of reinforced load bearing joints and a honeycomb core at each spacing between wrapped mandrels, placing honeycomb core between the load bearing joints along the sides of the wrapped mandrels, covering the sides with a preformed reinforced skin, establishing the outside contour of the skin by placing the built up composite structure in a mold and introducing pneumatic pressure around each mandrel forcing all parts together in the mold, and curing into a contoured composite structure.

4,565,596

TAPERED CONTAINER LABELING APPARATUS AND METHOD

Henry W. Clowe, 3600 Old Canton Rd., Jackson, Miss. 39216

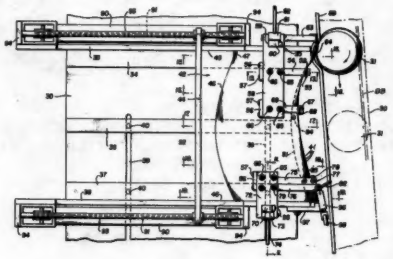
Filed Nov. 20, 1984, Ser. No. 673,366

Int. Cl.⁴ B65C *3/16, 9/04*

U.S. Cl. 156—215 **13 Claims**

1. A method of labeling conically tapered containers comprising transporting the containers in succession along a linear path while rotating them in one direction on their cone axes, applying glue to the conically tapered peripheries of the containers during their transport, positioning labels in a stack on edge adjacent to one side of the linear movement path of the containers, configuring the labels in the stack so that at least the forwardmost label is twisted between its upstream and downstream ends with its upstream end substantially vertically disposed and its downstream end forwardly inclined from bottom-to-top and with the inclination of the label progressively increasing from its upstream to its downstream end, and engaging the glued periphery of each container with the upstream end of the forwardmost label in the stack and progressively withdrawing the forwardmost label from the stack between its upstream and downstream ends and during such withdrawal wrapping the label around and adhering it to the tapered periphery with the ends of the label in substantial alignment following application to the container.

6. A tapered container labeling apparatus comprising a bed plate, fixed and adjustable parallel spaced label guide rails on the bed plate, a contoured label stack pusher block engaged with said guide rails, a substantially constant pressure label stack feed means engaged with the rear of the pusher block, an on-edge stack of labels having their lower edges engaged with



said rails and the rear of said stack being engaged with a forward contoured face of said pusher block, a system of upper and lower laterally spaced knives on the bed plate adapted to engage the forward labels in the stack at laterally spaced points along and near their upper and lower edges to impart to the labels a longitudinally twisted configuration between their upstream and downstream ends and a progressively forwardly inclined disposition between their upstream and downstream ends, means to convey upwardly tapering and rotating containers horizontally in succession across the front of the stack of labels with glue applied to the tapered peripheries of the containers whereby the tapered peripheries of the containers can engage the upstream ends of labels and separate them from the front of the stack while winding them around the tapered peripheries, and means to apply glue to the downstream end forward faces of labels in said stack whereby the downstream ends can adhere to the upstream ends of labels applied to said tapered peripheries.

4,565,597

METHOD FOR PRODUCING A VENEER WEB

Gerhard Schülte, Blomberg, Fed. Rep. of Germany, assignor to Blomberger Holzindustrie, B. Hausmann GmbH & Co, KG, Blombeg, Fed. Rep. of Germany

Continuation of Ser. No. 491,484, May 4, 1983, abandoned. This application Apr. 19, 1985, Ser. No. 724,936

Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3217063

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—250 **6 Claims**

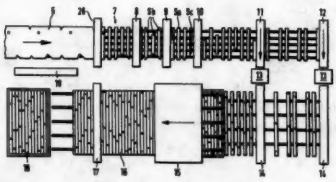
1. A method for producing a veneer web by joining individual veneer strips of limited length and width, said strips being cut from a raw veneer sheet in dependence on fault areas and quality variations thereof, comprising the steps of:

(a) dividing the raw veneer substantially parallel to the fiber direction into strips of equal width independently of the dimensions of the finished veneer web,

(b) trimming the non-usable longitudinal sections of strips having partially unacceptable faults along their longitudi-

nal extent for obtaining equal width strip sections of effectively usable length,

(c) eliminating strips having no effectively usable sections as well as the non-usable sections trimmed off the usable strip sections,



(d) joining the usable strip sections and any usable full length strips in their longitudinal direction for obtaining an endless strip, and dividing the same into strip lengths all of equal width, and

(e) joining the thus obtained strips, all of equal width, transversely to their longitudinal direction for obtaining a veneer web.

4,565,598

METHOD AND APPARATUS FOR CONTROLLING DIAMETER IN CZOCHRALSKI CRYSTAL GROWTH BY MEASURING CRYSTAL WEIGHT AND CRYSTAL-MELT INTERFACE TEMPERATURE

Robert S. Seymour, Adelaide, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

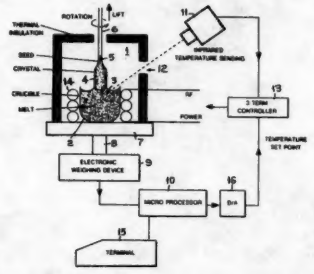
PCT No. PCT/AU82/00216, § 371 Date Aug. 11, 1983, § 102(e) Date Aug. 11, 1983, PCT Pub. No. WO83/02464, PCT Pub. Date Jul. 21, 1983

PCT Filed Dec. 22, 1982, Ser. No. 527,516

Claims priority, application Australia, Jan. 4, 1982, PF2151

Int. Cl.[4] C30B *15/28*; G06F *15/46*

U.S. Cl. 156—601 **8 Claims**



1. A method of diameter control in Czochralski crystal growth which comprises the steps of:

(a) drawing a crystal-forming material from a melt in a crucible at a controlled rate and progressively measuring both the temperature of the melt and the weight of the residue of the melt in the crucible;

(b) feeding the weight measurement data obtained according to step (a) to a microprocessor of the type including a control algorithm to obtain an output; and

(c) feeding the temperature measurement and the microprocessor output to a threee term temperature controller which regulates the temperature of the melt and thereby controls automatically the diameter of the crystal.

4,565,599

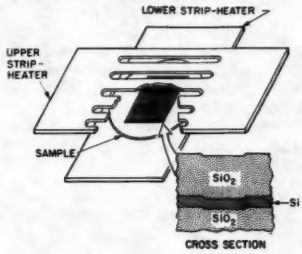
GRAPHOEPITAXY BY ENCAPSULATION

Michael W. Geis, Acton; Henry I. Smith, Sudbury; Dimitri A. Antoniadis, Brookline, and Dale C. Flanders, Lexington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 332,553, Dec. 21, 1981, abandoned, which is a continuation of Ser. No. 181,102, Aug. 25, 1980, abandoned. This application Dec. 10, 1984, Ser. No. 680,237

Int. Cl.[4] C30B *1/08*

U.S. Cl. 156—603 **7 Claims**



1. A method of enhancing epitaxy or preferred orientation in a silicon film on a silicon dioxide substrate which method includes the steps of depositing a silicon film to be oriented on the surface of a solid silicon dioxide substrate,

depositing a cap of material over said film to be oriented prior to crystallizing said film so that said cap coacts with said substrate and helps enhance epitaxy or preferred orientation in said film when said film is crystallized,

and applying heat to said film while sandwiched between said cap and said substrate to crystallize said film.

4,565,600

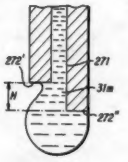
PROCESSES FOR THE CONTINUOUS PREPARATION OF SINGLE CRYSTALS

Jean Ricard, Grenoble, France, assignor to Criceram, Paris, France

Continuation of Ser. No. 257,968, Apr. 27, 1981, abandoned, and a continuation of Ser. No. 764,641, Feb. 1, 1977, abandoned, which is a continuation of Ser. No. 712,706, Aug. 9, 1976, abandoned. This application May 11, 1983, Ser. No. 492,368

Int. Cl.[4] C30B *15/34*

U.S. Cl. 156—608 **17 Claims**



1. A continuous process for the preparation of single crystals having a predetermined shape, which process comprises:

(a) charging the crystal-forming material to a crucible tapped in its lower region by a capillary conduit with a height greater than or equal to the retention height of the melted crystal-forming material in the capillary at the temperature and pressure used,

(b) bringing th crystal-forming material to a temperature above its melting point so as to form a drop at the lower end of the capillary,

(c) contacting a preformed seed crystal having a selected crystal orientation with the drop, and

(d) pulling the seed crystal in contact with the drop downwardly away from the crucible to form a single crystal, at a growth front between the crystal and the melted crystal-forming material, the quantity of crystal-forming material fed per unit of time being substantially equal to the amount of material pulled into the single crystal and the force at the growth front being substantially nil.

4,565,601

METHOD AND APPARATUS FOR CONTROLLING SAMPLE TEMPERATURE

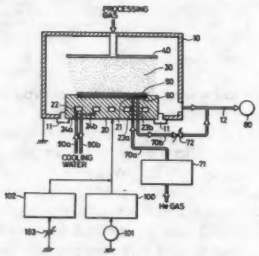
Yutaka Kakehi, Hikari; Norio Nakazato, Kudamatsu; Yoshimasa Fukushima, Hikari; Kousai Hiratsuka, Kudamatsu; Fumio Shibata, Kudamatsu; Noriaki Yamamoto, Kudamatsu, and Tsunehiko Tsubone, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,863

Claims priority, application Japan, Nov. 28, 1983, 58-166647

Int. Cl.[4] B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/02*

U.S. Cl. 156—643 **20 Claims**



1. A method for controlling the temperature of a sample comprising electrostatically attracting a sample to be mounted on a sample stand and processed in a vacuum and supplying a heat transmission gas to the gap between the under surface of said sample thus electrostatically attracted and said stand.

4,565,602

METHOD FOR TREATING CELLULOSE OBTAINED FROM CELLULOSE COOKING PROCESS

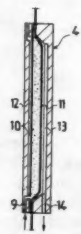
Juhani Haartti, Taipalsaari; Pertti Heitto, Espoo; Jaakko J. Helsto, Helsinki, and Nuutti Vartiainen, Saimaanharju, all of Finland, assignors to Larox Oy, Lappenranta, Finland

Filed Feb. 8, 1984, Ser. No. 578,127

Claims priority, application Finland, Feb. 17, 1983, 830542

Int. Cl.[4] D21C *9/02*

U.S. Cl. 162—56 **7 Claims**



1. A method for treating cellulose obtained from a pulp digestion process for paper making purposes, the treatment being carried out in a chamber filter comprising a filter cloth and a compression membrane defining therebetween a chamber for the intake of the cellulose to be treated, as well as a first space on the other side of the compression membrane for the intake of a compression medium and a second space on the other side of the filter cloth for receiving and disposing of materials separated from the cellulose, said method comprising the steps of:

(a) feeding into said chamber defined by said filter cloth and said membrane a cellulose pulp slurry containing waste digestion liquor

(b) introducing into said first space a pressurized medium to compress said membrane and pulp and separate said waste digestion liquor from the cellulose through said filter cloth and into said second space;

(c) removing said compression medium from said first space;

(d) feeding water into said chamber to wash said cellulose and removing the resulting wash liquor through said second space;

(e) feeding a bleaching medium into said chamber to bleach said cellulose;

(f) passing a drying medium through said cellulose while retaining it in said chamber; and

(g) removing the cellulose from said chamber.

4,565,603

METHOD AND DEVICE FOR REDUCING DISTURBANCES DURING PAPER WEB FORMATION

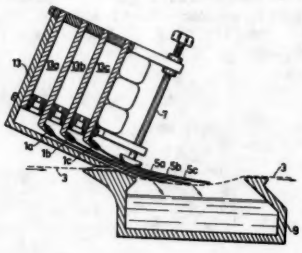
Per L. Reiner, Matfors, and Sven U. T. Aberg, Mölnlycke, both of Sweden, assignors to Molnlycke Aktiebolag, Gothenburg, Sweden

Continuation of Ser. No. 412,965, Aug. 30, 1982, abandoned, which is a continuation of Ser. No. 220,029, Dec. 1, 1980, abandoned. This application May 31, 1984, Ser. No. 615,667

Claims priority, application Sweden, May 23, 1979, 7904555; PCT Int'l Appl., May 20, 1980, PCT/SE/8000145

Int. Cl.[4] D21F *1/02*

U.S. Cl. 162—123 **9 Claims**



1. A method of forming a paper web from a fiber suspension comprising injecting a stream of said fiber suspension through a slice opening onto an upper surface of a travelling paper web-forming surface; maintaining said travelling paper web-forming surface free of support for a predetermined distance downstream of said slice opening, said predetermined distance including a first end and a second end, said first end being substantially adjacent to said slice opening; maintaining a flexible lip proximate to said upper surface of said travelling paper web-forming surface and spaced therefrom for only a portion of said predetermined distance; and applying a vacuum to the lower surface of said travelling paper web-forming surface throughout said predetermined distance, whereby said paper web is substantially entirely formed and said fiber suspension is substantially dewatered within said space between said flexible lip and said travelling paper web-forming suspension, said vacuum is applied to said lower surface of said travelling paper web-forming surface for a distance beyond said flexible lip so as to further dewater said fiber suspension, and disturbances

during the formation of said paper web and throughout said predetermined distance are substantially reduced.

4,565,604

RETENTION AND DRAINAGE AID

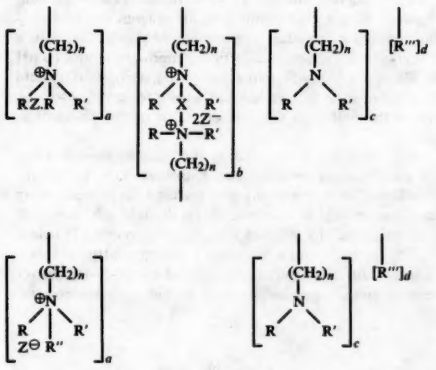
P. E. Anders Hansson, and Felek Jachimowicz, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 476,807, Mar. 18, 1983, Pat. No. 4,513,122. This application Dec. 31, 1984, Ser. No. 687,682

Int. Cl.[4] D21H *3/40*

U.S. Cl. 162—168.2 11 Claims

1. A process for forming cellulosic paper products using conventional paper making apparatus which comprises contacting cellulosic pulp used to form said products prior to its placement on a drainage web with an effective amount of an aqueous solution of a polymeric product comprising a water soluble polymer having a substantially completely saturated polymeric backbone chain with a pendant alkylene amine groups represented by the formula:



wherein ~~~~~ represents a substantially saturated hydrocarbon polymer chain, each R separately represents an unsubstituted or substituted C_1–C_6 alkyl, cycloalkyl or aryl; R′ represents hydrogen or an R group; R″ represents hydrogen or a C_1–C_3 alkyl; R‴ represents hydrogen or a comonomer pendant group or both, X is a residual organic group of a compound capable of covalently bonding with at least two nitrogen atoms of the polymer and Z is a counterion; n is an integer of from 1 to 3; a, b, c, d and e are each integers such that a, c and e is from about 1 to 90 percent, b is from about 1 to 30 percent and d is from about 1 to 60 percent of the total sum of a+b+c+d+e; and the sum of the groups of a+c+e is at least 4 weight percent of the polymer product; said polymer is formed by reacting under substantially anhydrous conditions an olefinic bond containing polymer with an amine selected from a primary or secondary amine, hydrogen and carbon monoxide in the presence of a Group VIII metal containing compound to form a polymeric material having pendant alkylene amine groups and further reacting a portion of the alkylene amine groups with an agent which is at least difunctional with respect to the pendant secondary and tertiary amino groups, said difunctional agent being in molar ratio of from 0.3 to 1.1 with respect to said secondary amino groups and from 0.5 to 2.2 with respect to said tertiary amino groups.

4,565,605

HEATING WALL FOR COKE-OVEN BATTERY

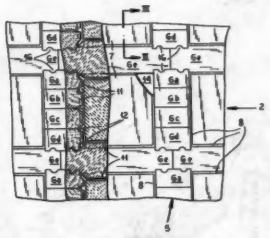
Dirk Kruse, Düsseldorf-Heerdt, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 18, 1983, Ser. No. 476,527

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210108

Int. Cl.[4] C10B *29/02*

U.S. Cl. 202—139 9 Claims



1. In a coke-oven battery with a plurality of juxtaposed horizontal coking chambers separated by longitudinal walls each provided with a multiplicity of vertical heating ducts,

the improvement wherein each of said longitudinal walls comprises a frame structure of refractory blocks of silica defining said heating ducts and forming columns of vertically spaced-apart rectangular apertures with vertical and horizontal sides between each heating duct and the adjoining coking chambers, said apertures being each occupied by a unitary silicon carbide refractory plate of lower thermal resistance than the surrounding blocks, said blocks being divided into longitudinal and transverse blocks, said structure consisting of two parallel frameworks each composed of longitudinal blocks between the apertures of a column and transverse blocks separating adjacent heating ducts from one another, the transverse blocks of said frameworks being provided with interlocking formations, said transverse blocks being stacked in a plurality of tiers along each vertical side of a respective aperture between horizontal rows of longitudinal blocks, the transverse blocks of said frameworks overlapping one another in alternate tiers.

4,565,606

METALLIZATION OF ELECTRICALLY INSULATING POLYIMIDE/AROMATIC POLYAMIDE FILM SUBSTRATES

Robert Cassat, Ternay, France, assignor to Rhone-Poulenc Recherches, Courbevoie, France

Filed Apr. 16, 1984, Ser. No. 600,457

Claims priority, application France, Apr. 15, 1983, 83 06404

Int. Cl.[4] C25D *5/56*

U.S. Cl. 204—20 35 Claims

1. A process for conductively metallizing an electrically insulating polyimide/aromatic polyamide film substrate, comprising (1) shaping into a thermally stable film substrate an intimate homogeneous admixture of an essentially thermosetting film-forming polyimide/aromatic polyamide polymer matrix having from 20 to 60 percent by total weight of said admixture of finely divided, non-conductive non-precious metal oxide particles uniformly distributed therein, (2) disrupting at least one face surface of said shaped film substrate to expose thereon a plurality of said finely divided, non-conductive metal oxide particles, and (3) treating said at least one disrupted face surface with a reducing agent to reduce said exposed metal oxide particles into a layer of electrically conductive free metal, whereby said at least one face surface is rendered electrically conductive.

4,565,607

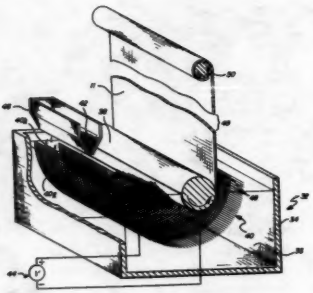
METHOD OF FABRICATING AN ELECTROPLATED SUBSTRATE

Joseph J. Hanak, Lawrenceville, N.J.; Prem Nath, Rochester, Mich.; Masatsugu Izu, Birmingham, Mich., and James Young, West Bloomfield, Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 588,013, Mar. 9, 1984, Pat. No. 4,530,739. This application May 16, 1985, Ser. No. 734,712

Int. Cl.[4] C25D 5/48

U.S. Cl. 204—38.1 17 Claims



1. A method of fabricating a large area semiconductor device, said device divided into a plurality of small area segments; each small area segment including a thin film body of semiconductor material and a substrate having a substantially defect-free surface; said method including the steps of:

electroplating, from a mandril, a relatively thin metallic substrate characterized by a substantially defect free deposition surface having features which (1) provide for the reflection of light and (2) do not substantially interfere with the subsequent deposition of the uniform and homogeneous thin film body of semiconductor material thereupon,

depositing the thin film body of semiconductor material atop the substantially defect free deposition surface of the substrate;

removing portions of the (1) body of semiconductor material and/or (2) subjacent metallic substrate; and

securing an insulating support member to the surface of the metallic substrate opposite the substantially defect-free deposition surface thereof; whereby the large area semiconductor device is divided into a plurality of electrically discrete small area segments.

4,565,608

ALKALINE CYANIDE BATH FOR ELECTROLYTIC DEPOSITION OF COPPER-TIN-ALLOY COATINGS

Gerd Hoffacker, Schwabisch Gmund, and Willi Müller, Deggingen, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 30, 1984, Ser. No. 666,318

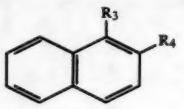
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339541

Int. Cl.[4] C25D 3/58, 3/60

U.S. Cl. 204—44 15 Claims

1. In an alkaline cyanide bath for the electrolytic deposition of bright to brilliant copper-tin alloy coatings, the improvement comprising including in the bath at least one organic material from the following group:

ethoxylated naphthols of the general formula



wherein

R_3 is H or $O(CH_2—CH_2O)_mH$,

R_4 is $O(CH_2CH_2O)_mH$ or H

m = 10 to 14

in an amount of 0.05 to 5 g/l.

4,565,609

BATH AND PROCESS FOR PLATING TIN, LEAD AND TIN-LEAD ALLOYS

Fred I. Nobel, Sands Point; Barnet Ostrow, Roslyn, and David N. Schram, Freeport, all of N.Y., assignors to LeaRonal, Inc., Freeport, N.Y.

Division of Ser. No. 564,516, Dec. 22, 1983, which is a continuation-in-part of Ser. No. 301,390, Sep. 11, 1981, abandoned. This application Apr. 15, 1985, Ser. No. 723,595

Int. Cl.[4] C25D 3/32, 3/36, 3/56, 3/60

U.S. Cl. 204—44.4 24 Claims

1. An electrolytic bath for the electrodeposition of tin, lead and tin-lead alloy metals comprising an aqueous solution containing the metal or metals as a soluble alkyl sulfonate salt, a soluble alkylsulfonic acid in a sufficient amount to impart a pH below about 3 to the bath, and a quaternary nitrogen-fatty acid wetting agent in sufficient amount to improve the throwing power of the bath and the surface finish of the electrolytic deposit.

17. A method for electroplating tin, lead, or tin-lead alloy metals which comprises immersing a substrate to be plated in a electroplating bath comprising an aqueous solution containing the metal or metals as a soluble alkylsulfonate salt, a soluble alkylsulfonic acid in a sufficient amount to impart a pH below about 3 to the bath, and a quaternary nitrogen-fatty acid wetting agent in sufficient amount to improve the throwing power of the bath and the surface finish of the electrolytic deposit.

4,565,610

BATH AND PROCESS FOR PLATING LEAD AND LEAD/TIN ALLOYS

Fred I. Nobel, Sands Point; Barnet Ostrow, Roslyn, and David N. Schram, Freeport, all of N.Y., assignors to LeaRonal, Inc., Freeport, N.Y.

Division of Ser. No. 564,516, Dec. 22, 1983, which is a continuation-in-part of Ser. No. 301,390, Sep. 11, 1981, abandoned. This application Apr. 15, 1985, Ser. No. 723,597

Int. Cl.[4] C25D 3/32, 3/36, 3/56, 3/60

U.S. Cl. 204—44.4 8 Claims

1. An electroplating bath for the electrodeposition of lead and lead-tin alloys comprising an aqueous solution containing the metal or metals as a lower alkylsulfonate salt, a soluble alkylsulfonic acid in a sufficient amount to give a pH below about 3 to the bath, an aromatic aldehyde and a soluble bismuth compound in a sufficient amount to extend current density range for producing bright deposits.

7. A method for electroplating lead and lead-tin alloys which comprises immersing a substrate to be plated into an electroplating bath comprising an aqueous solution containing lead and tin as soluble alkyl-sulfonates, a sufficient amount of a soluble alkylsulfonic acid salt to impart a pH value below about 3 to said bath, and an aromatic aldehyde and a soluble bismuth compound in a sufficient amount to extend current density range for producing bright deposits.

4,565,611

AQUEOUS ELECTROLYTES AND METHOD FOR ELECTRODEPOSITING NICKEL-COBALT ALLOYS

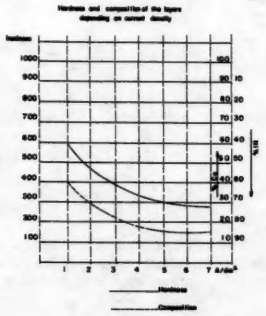
Heinz Wagner, Hilden; Klaus Scharwaechter, Solingen, and Monika Nee, Duesseldorf, all of Fed. Rep. of Germany, assignors to Gerhard Collardin GmbH, Cologne, Fed. Rep. of Germany

Filed May 1, 1985, Ser. No. 729,314

Claims priority, application Fed. Rep. of Germany, May 9, 1984, 3416993

Int. Cl.[4] C25D *3/56*

U.S. Cl. 204—44.5 21 Claims



13. An aqueous electrodeposition bath for the electrodeposition of hard, tarnish resistant, white shining, nickel and cobalt containing coatings comprising

a. a nickel ion content of from about 15 to about 150 g/l,

b. a cobalt ion content of from about 0.5 to about 15 g/l,

c. a chloride ion content of from about 5.0 to about 25.0 g/l,

d. a boric acid content of from about 20 to about 40 g/l,

e. an aliphatic C_1–C_4 aldehyde content of from about 0.1 to about 1 g/l, and

f. an aromatic water-soluble carbonyl compound content of from about 0.005 to about 0.05 g/l,

wherein the pH of the bath is from about 3.6 to about 4.8, the ratio of nickel ions to cobalt ions is from about 8:1 to about 20:1, and the ratio of aldehyde to carbonyl compound is from about 20:1 to about 50:1.

4,565,612

PROCESS FOR REDUCING SULPHATE ION CONCENTRATION IN AQUEOUS SODIUM HYDROXIDE SOLUTIONS

David L. Fry, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1984, Ser. No. 680,016

Int. Cl.[4] C25B *1/16*

U.S. Cl. 204—98 4 Claims

3. A process for reducing chloride and sulphate ion concentration in an aqueous concentrated solution comprising sodium hydroxide, sodium chloride, and sodium sulphate which comprises:

(A) adding at least one of sodium carbonate or bicarbonate to said aqueous concentrated solution in at least a stoichiometric amount based upon the concentration of sodium sulphate present therein in accordance with the formulas:

$$Na_2CO_3+2Na_2SO_4 \rightarrow Na_4CO_3(SO_4)_2 \text{ and}$$

$$NaHCO_3+NaOH \rightarrow Na_2CO_3+H_2O,$$

(B) forming an insoluble sodium carbonate-sodium sulphate double salt;

(C) removing said insoluble salt and said sodium chloride from said aqueous solution; and

(D) recovering a purified aqueous solution of sodium hydroxide.

4. The process of claim 3 wherein an excess of at least one of sodium carbonate or bicarbonate is added to said aqueous concentrated solution wherein said excess is that amount which provides, after formation of said insoluble sodium carbonate-sodium sulphate double salt, a sodium carbonate and/or bicarbonate concentration of at least about 0.3 to about 1.0 gram per liter.

4,565,613

PROCESS FOR REMOVING A LAYER OF THICK MERCURY FROM THE BOTTOM OF MERCURY-CATHODE ELECTROLYSIS CELLS AND A PROCESS FOR THE ELECTROLYSIS OF AN AQUEOUS SOLUTION OF AN ALKALI METAL HALIDE IN A MERCURY-CATHODE CELL

Robert Schöberle, Brussels, Belgium, and Walter Schaffer, Hallein, Austria, assignors to Solvay & Cie, Brussels, Belgium

Filed Jun. 19, 1984, Ser. No. 622,223

Claims priority, application France, Jun. 20, 1983, 83 10284

Int. Cl.[4] C25G *1/40*

U.S. Cl. 204—99 11 Claims

1. Process for removing a layer of thick mercury from the bottom of electrolysis cells having a cathode formed by a film of mercury flowing over the bottom, according to which a scraper is moved in the mercury film, characterized in that the movement of the scraper is controlled so as to leave continuously a residual film of thick mercury of a thickness of at least 0.04 mm adhering to the bottom.

4,565,614

POLYMER MIXTURES AND CO-VULCANIZATES PRODUCED THEREFROM

Hartmuth Buding, Dormagen; Zsolt Szentiványi, and Joachim Thörmer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,536

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337397

Int. Cl.[4] C08F *2/46*

U.S. Cl. 522—112 5 Claims

1. Mixtures comprising (a) from 95 to 5% by weight of a fluoroelastomer and (b) from 5 to 95% by weight of an elastomer which contains nitrile groups and has from 25 to 140 nitrile-nitrogen atoms and less than 35 double bonds per 1000 carbon atoms, the percentages relating to the total of (a) and (b).

4,565,615

GLOW DISCHARGE STABILIZATION OF PIEZOELECTRIC POLYMER FILM

Peter F. Radice, Upper Merion, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 1, 1984, Ser. No. 667,187

Int. Cl.[4] C07C *3/24*

U.S. Cl. 204—168 12 Claims

1. Method of stabilizing a poled piezoelectric and pyroelectric polymer film comprising the step of exposing surface of said film to a glow discharge at a reduced pressure for a time sufficient to form said stabilized film.

4,565,616

METHOD FOR PRODUCING A PHOTOELECTROFORMING MANDREL

James S. Kenworthy, Rockland, and Thomas G. Kozinski, South Attleboro, both of Mass., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 605,506, Apr. 30, 1984. This application May 6, 1985, Ser. No. 730,414
Int. Cl.[4] C23C *14/00*
U.S. Cl. 204—192 C 7 Claims

1. A method for producing an electroforming mandrel comprising the steps of:

a. providing a substrate which transmits actinic radiation with a pattern which masks the transmission of actinic radiation;

b. depositing on a surface of the patterned substrate a continuous conductive film which transmits actinic radiation;

c. depositing on the conductive film a continuous layer of a photoresist;

d. exposing said photoresist to actinic radiation through said masking substrate and conductive film; and

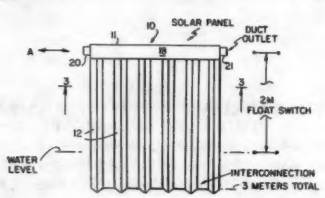
e. developing said photoresist to selectively remove a portion thereof in order to uncover a pattern of the underlying conductive film.

4,565,617

PHOTOVOLTAIC ENERGY GAS GENERATING APPARATUS

Om Ahuja, 89 Clearmeadow Dr., East Meadow, N.Y. 11554

Filed Dec. 18, 1981, Ser. No. 331,971
Int. Cl.[4] C25B *15/08, 9/00, 11/04*
U.S. Cl. 204—229 16 Claims



1. An apparatus for the recovery and storage of hydrogen, cathode gas, from water, said apparatus comprising:

(a) an aquatic float, said float defining:

(i) a cathode gas collection chamber,

(ii) at least one outlet to said collection chamber for withdrawing the collected gas,

(iii) a plurality of elongate tubes extending downwardly from said collection chamber and in open communication therewith,

(iv) the displacement of the float creating a column of water within each said elongate tube,

(b) at least one cathode within each elongate tube, said cathodes extending downwardly from the upper ends of said elongate tubes to a predetermined level,

(c) at least one anode outside said elongate tubes extending downwardly from said float into said water,

(d) a photovoltaic panel mounted on said collection chamber and in electrical communication with said cathodes and anodes to electrolyze said water and collect the electrolyzed cathode gas about said cathode within said elongate tubes,

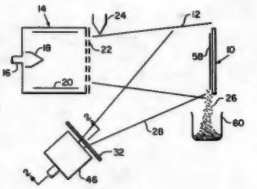
whereby the electrolyzed cathode gas rises within said elongate tubes to collect within said collection chamber until the float rises above said predetermined level, whereupon the electrolysis is automatically terminated as said cathodes and, or anodes rise above said water.

4,565,618

APPARATUS FOR PRODUCING DIAMONDLIKE CARBON FLAKES

Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 591,089, Mar. 19, 1984, Pat. No. 4,495,044, which is a continuation-in-part of Ser. No. 495,381, May 17, 1983, Pat. No. 4,437,962. This application Nov. 5, 1984, Ser. No. 668,433
Int. Cl.[4] C23C *14/00*
U.S. Cl. 204—298 18 Claims



1. In apparatus for making diamondlike carbon flakes wherein carbon is deposited on a target that is ion sputtered in a vacuum environment, an improved carbon source comprising

a cylindrical graphite cathode having a curved peripheral surface terminating at a substantially planar end surface facing towards said target,

a graphite anode positioned between said cylindrical cathode and said target,

means for establishing an electrical arc between a cathode spot on said planar end surface of said cathode and said anode thereby generating a flow of carbon ions and atoms towards said target, and

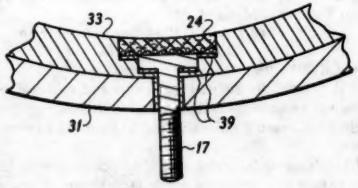
means for confining said cathode spot to said planar end surface of said cylindrical cathode thereby inhibiting movement of said cathode spot to said curved peripheral surface of said cathode from said planar end surface.

4,565,619

COMPOSITE ELECTRODE STRUCTURE

Robert J. Gardner, Norton, and John R. Martin, Foxboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Feb. 18, 1983, Ser. No. 467,711
Int. Cl.[4] G01N *27/46;* C25B *11/12;* G01F *1/58*
U.S. Cl. 204—400 11 Claims



1. A nonporous electrode assembly comprising: a composite electrode element, including:

a plurality of carbon fibers arranged in a threedimensional array, the majority of said fibers being randomly aligned within a series of mutually parallel planes, yet being packed densely enough to produce multiple points of contact thereamong, said electrode element having an elongated face with a longitudinal dimension which is greater than a thickness dimension measured perpendicular to said elongated face, said parallel planes being paral-

lel to said elongated face, whereby electrical continuity is established throughout said array, and the electrical conductivity characteristic of said electrode element is greater in a direction parallel said elongated face than that in a direction normal to said elongated face, and

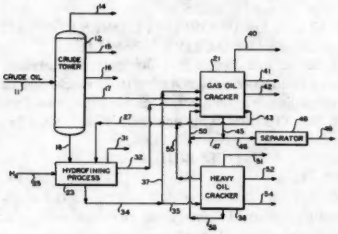
a matrix of polymeric material permeating the interfiber voids within said array so as to produce a coherent, nonporous structure; and

contact means for electrically coupling said electrode element to an external electrical circuit.

4,565,620
CRUDE OIL REFINING

Dean P. Montgomery; James W. Gall, both of Bartlesville, Okla., and Ed D. Davis, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 25, 1984, Ser. No. 613,944
Int. Cl.⁴ C10G *69/00, 69/14*
U.S. Cl. 208—80 **3 Claims**



1. A method for improving the value of the product mix obtained from the refining of a crude oil in a process in which a crude oil feed is fractionated, hydrofined and cracked, wherein a first gas oil fraction resulting from the fractionation of said crude oil is cracked in a first catalytic cracking process, wherein topped crude resulting from the fractionation of said crude oil is hydrofined to produce at least a heavy hydrofined fraction, wherein at least a portion of said heavy hydrofined fraction is cracked in a second catalytic cracking process to produce at least a first heavy cycle oil fraction, wherein at least a second heavy cycle oil fraction is produced by said first catalytic cracking process, said method comprising the step of recycling said first heavy cycle oil fraction from said second catalytic cracking process as a feed to the process in which said topped crude is hydrofined, and the step of recycling said second heavy cycle oil fraction from said first catalytic cracking process as a feed to the process in which said topped crude is hydrofined.

4,565,621
HYDROCRACKING WITH RARE EARTH-CONTAINING Y ZEOLITE COMPOSITIONS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 327,611, Dec. 4, 1981, Pat. No. 4,429,053. This application Jan. 9, 1984, Ser. No. 569,238
Int. Cl.⁴ C10G *47/18, 47/20*
U.S. Cl. 208—111 **25 Claims**

1. A hydrocracking process which comprises contacting a hydrocarbon feedstock with hydrogen in the presence of a hydrocracking catalyst under hydrocracking conditions, said catalyst containing a zeolite having been prepared by a process comprising:

(a) cation-exchanging a type Y crystalline aluminosilicate zeolite with rare earth-containing cations;

(b) calcining the resultant rare earth-exchanged zeolite in the presence of water vapor at a water vapor partial pressure of at least about 0.2 p.s.i.a.;

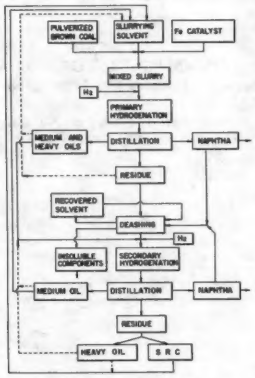
(c) ion-exchanging the calcined zeolite from step (b) with ammonium ions; and

(d) introducing, after said ammonium ion exchange of step (c), a metal component consisting essentially of one or more noble metal-containing cations into said zeolite by cation exchange.

4,565,622
METHOD OF LIQUEFYING BROWN COAL

Yukio Nakako, Takarazuka; Tetsuo Matsumura, Kobe; Toshio Ozawa, Kobe; Kaizaburo Saito, Kobe; Shin-ichi Katsushima, Kobe; Shin-ichi Oya, Kobe; Toshiaki Okui, Kobe; Yutaka Mito, Ibaraki; Osamu Okuma, and Tomoji Takahashi, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seikosho, Kobe; Mitsubishikaseikogyo Kabushikikaisha, Tokyo; Idemitsukosan Kabushiki Kaisha, Tokyo; Aziaseiyu Kabushiki Kaisha, Tokyo and Nippon Kattan Ekika Kabushiki Kaisha, Tokyo, all of, Japan

Filed Nov. 9, 1983, Ser. No. 550,122
Claims priority, application Japan, Dec. 15, 1982, 57-220970
Int. Cl.⁴ C10G *1/06*
U.S. Cl. 208—10 **18 Claims**



1. A method of liquefying brown coal which comprises:

[I] effecting a primary hydrogenation at a temperature and pressure sufficient to promote the efficient hydrogenation of a slurry prepared by adding an iron-based catalyst and a slurrying solvent to brown coal;

[II] distilling all or a portion of the primary hydrogenation product, whereby a naphtha fraction, a middle distillate oil fraction, a heavy distillate oil fraction and a distillation residue are produced;

[III] recycling a portion of said middle distillate oil fraction, said heavy distillate oil fraction and said distillation residue to said primary hydrogenation step as the slurrying solvent;

[IV] removing ash from the remaining portion of the distillation residue, thereby separating the same into an insoluble fraction containing ash, insoluble organic matter or a mixture thereof, and a soluble fraction as a solution in said solvent; and feeding the soluble fraction and the remainder of said middle and heavy distillate fractions to a fixed-bed column reactor packed with a molbdenum-based cayalyst for a secondary hydrogenation at a temperature and pressure sufficient to promote the efficient hydrogenation thereof, wherein a slurrying solvent having an aromatic carbon number index within the range of about 0.4 to 0.8 is used in said secondary hydrogenation; and

[V] separating the naphtha fraction from the secondary hydrogenation product and recycling all or a portion of

the remainder to said primary hydrogenation step as the slurrying solvent therefor.

4,565,623

METHOD FOR DEASPHALTING HEAVY OILS USING A MISCIBLE SOLVENT AT A LOW TREAT RATIO AND A CARBON DIOXIDE ANTISOLVENT

Thomas A. Davis, Annandale, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 20, 1984, Ser. No. 642,502
Int. Cl.[4] C10C *3/08*
U.S. Cl. 208—309 7 Claims

1. A process for extracting hydrocarbon oil from heavy hydrocarbon oil feedstock comprising the steps of:

contacting said heavy hydrocarbon oil feedstock with a solvent at a temperature and in a volume ratio of solvent to feedstock in the range between about 1:0.75 to 1:1.5 such that the solvent and feedstock are completely miscible and form a single phase mixture,

introducing a gaseous antisolvent into said single phase mixture to produce an upper phase containing the extracted hydrocarbon oil and a heavier lower phase, and

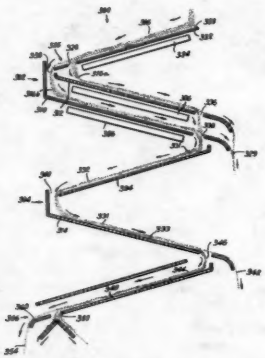
recovering said hydrocarbon oil from the upper phase.

4,565,624

GRAVITY—MAGNETIC ORE SEPARATORS

Edward Martinez, 1 Alpine Ct., Huntington Ct., Belle Mead, N.J. 08502

Filed Apr. 4, 1983, Ser. No. 482,040
Int. Cl.[4] B03C *1/06*
U.S. Cl. 209—40 7 Claims



1. A method for separating magnetic or weakly magnetic material from a mixture including non-magnetic material having a lower specific gravity than said magnetic or weakly magnetic material, said method being effective for separating magnetic or weakly magnetic particles, the method comprising:

combining said mixture with non-magnetic liquid for defining a pulp density of above about 5%;

feeding said pulp onto the raised end of a downwardly sloping progressively narrower surface of sufficient length to achieve at least partial gravity separation between said magnetic or weakly magnetic material and said non-magnetic material as said pulp flows downwardly over said surface under the influence of the force of gravity;

applying a magnetic force beneath said sloping surface while said pulp flows thereover for augmenting said gravity separation by magnetic separation by attracting said magnetic or weakly magnetic material toward said surface, there being no other forces applied to said magnetic or weakly magnetic material in opposition to said magnetic and gravity forces;

intermittently reducing the magnetic force to prevent the buildup of said magnetic or weakly magnetic material on said surface by permitting forward motion of said magnetic or weakly magnetic material; and

separating, at the lower end of said surface, the higher specific gravity magnetic or weakly magnetic material comprising a portion of the material adjacent said surface from the lower specific gravity non-magnetic material comprising a portion of the material riding above said material adjacent said surface.

4,565,625

BENEFICIATION OF PHOSPHATE ORES CONTAINING SURFACE ACTIVATED SILICA

Shuang-shii Hsieh, and James R. Lehr, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 650,390, Sep. 14, 1984, now Defensive Publication No. T105,404. This application Dec. 10, 1984, Ser. No. 680,117
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—167 2 Claims

1. An ore flotation process which comprises the steps of:

(1) subjecting a Florida phosphate ore containing surface-activated silica and silicates to washing and sizing means wherefrom is removed as flotation feed the minus 28-plus 400-mesh fraction;

(2) subsequently beneficiating said flotation feed by adjusting the pulp density thereof, through the addition of aqueous medium thereto, to about 65 percent solids; adjusting the pH thereof, by mixing therewith predetermined quantities of caustic soda sufficient to raise the pH to at least about 9; and conditioning same by intimately mixing therewith predetermined quantities of fatty acid and fuel oil;

(3) removing the resulting conditioned flotation feed from step 2 supra and introducing same into first froth flotation means wherein the phosphate values therein are recovered in the float therefrom as intermediate product and the underflow therefrom is discarded to waste;

(4) subsequently deoiling the resulting intermediate phosphate concentrate from step 3 supra by scrubbing same with sulfuric acid to remove said fatty acid and fuel oil residuals from the phosphate mineral surfaces introduced theronto in step 2 supra;

(5) subsequently introducing the resulting deoiled first froth flotation intermediate product into reverse second froth flotation means and intimately mixing therewith as silica modifier from about 0.01 to about 2.0 kg of HF per ton of feed or from about 0.01 to about 1.0 kg of alkyl diphosphonic acid per ton of feed and mixtures thereof, along with predetermined quantities of an amine sufficient to be utilized therewith as a silica collector to float said silica as waste; and

(6) recovering as an underflow from said second reverse froth flotation means, as product, substantial amount of the phosphate values introduced into said process as said froth flotation feed fraction;

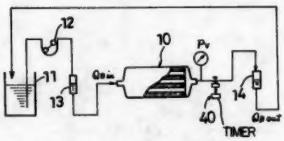
said process characterized by the fact that the use of the silica modifier(s) in step 5 thereof effects an increase in the recovery of the phosphate values in step 6 thereof, of at least about 10 percent greater than would be realized without the use of said silica modifier(s).

4,565,626

APPARATUS FOR BLOOD TREATMENT BY PRESSING BLOOD INTO TREATING MATERIAL AND THEN DRAWING IT OUT

Junichi Azuma, Nishinomiya; Koichi Watanabe, Kawabe, and Masatake Hori, Itami, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 30, 1983, Ser. No. 557,227
Int. Cl.[4] B01D 31/00
U.S. Cl. 210—138 7 Claims



1. An apparatus for blood treatment, comprising:

a housing having a blood inlet means for introducing blood to be treated and a blood outlet means for exhausting treated blood from said housing;

at least one blood channel within said housing and extending from said inlet means to said outlet means and being constituted by a plasma-separating membrane capable of allowing plasma component of blood to permeate therethrough while preventing blood cells from penetrating therethrough, said housing having a space therein surrounding said membrane;

a blood treating material packed in said space within said housing around said membrane;

a pump connected to said inlet means for pumping the blood to be treated into said inlet means at a predetermined pressure;

a blood circuit connected to said outlet means;

at least part of the housing comprising means including an elastic material in contact with said blood treating material for undergoing elastic expansion in response to a pressure buildup and for undergoing contraction when said pressure is reduced; and

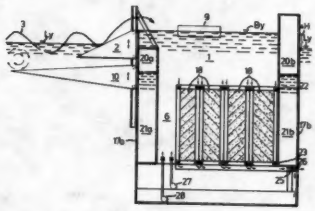
a clamp mechanism downstream of said outlet means including means for intermittently operating said clamp mechanism for clamping said blood circuit for at least substantially reducing flow of blood through said blood circuit downstream of said outlet means and for causing a buildup of pressure in said at least one blood channel for causing plasma component of blood flowing in said at least one blood channel to permeate through said plasma-separating membrane toward said blood treating material to bring plasma into contact with said blood treating material and building up pressure in said space around said membrane and causing elastic expansion of said elastic material, then for releasing said blood circuit for allowing reduction of pressure in said blood circuit, and for permitting said elastic material to contract for exerting a force on plasma and blood treating material in said space for forcing plasma back through said plasma separating membrane back into said at least one blood channel.

4,565,627

APPARATUS FOR GATHERING VALUABLE FLOATING, DISSOLVED AND SUSPENDED SUBSTANCES FROM SEA WATER

Emil G. Lagström, Essingeringen 72C, S-112 64 Stockholm, Sweden; Torbjörn E. G. Westermark, Ladugårdsvägen 5, Tilley, Sweden (S-18338), and Sevald Forberg, Gillerbaken 15, Bandhagen, Sweden (S-12442)

PCT No. PCT/SE80/00108, § 371 Date Dec. 18, 1980, § 102(e) Date Dec. 8, 1980, PCT Pub. No. WO80/02235, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 17, 1980, Ser. No. 220,037
Claims priority, application Sweden, Apr. 18, 1979, 7903367
Int. Cl.[4] C02F 1/28; E02B 15/04
U.S. Cl. 210—242.1 6 Claims



1. An offshore plant for recovery of valuable materials from sea water comprising an elongated floating unit having a basin and adapted to be anchored in a sea current with one of its sides facing the approaching sea waves and in which said basin extends above the still-water surface of the sea water, at least one sloping ramp attached to the side of the unit facing the approaching waves for leading the waves into said basin from above to fill said basin with sea water, at least one layer of filters for sorbing the materials from the sea water in communication with said basin through intake valve means located in the basin to permit the water to pass through the filters by means of the hydrostatic pressure caused by the filling of the basin by the waves to above the still-water surface of the sea water and outlet valve means located below the still-water surface of the sea water for discharging the water passed through the filters back into the sea.

4,565,628

FILTER APPARATUS

Johnny Arnaud, Houston, Tex., assignor to Hydrotreat, Inc., Houston, Tex.

Continuation of Ser. No. 491,712, May 5, 1983, abandoned, and a continuation-in-part of Ser. No. 428,345, Sep. 29, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,474
Int. Cl.[4] B01D 29/46
U.S. Cl. 210—232 6 Claims

1. A filter apparatus, comprising:

a housing, said housing being sealed at a first end thereof;

a filter element, comprising,

a mounting member, said mounting member including a first peripheral groove, said first peripheral groove extending from a first surface of said mounting member, said mounting member including a second peripheral groove extending from a second surface of said mounting member, at least a portion of each of said first and second grooves being tapered,

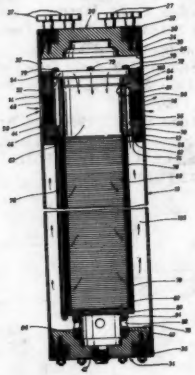
a first flexible sealing member disposed within said first groove,

a first ring at least partially insertable into said first groove, and

means for causing said first ring to enter said first groove and to cause said sealing member to wedge against the inner surface of said housing,

a second flexible sealing member disposed within said second groove,

a second ring at least partially insertable into said second groove, and



means for causing said second ring to enter said second groove and cause said second sealing member to wedge against the inner surface of said housing.

4,565,629

FILTER ASSEMBLY

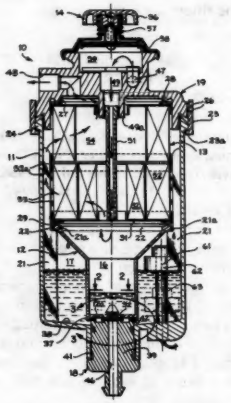
Michael E. Wilson, Modesto; David R. Olson, Turlock; Walter H. Stone, and Robin B. MacDonald, both of Modesto, all of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 568,271, Jan. 3, 1984, Pat. No. 4,502,956, Continuation of Ser. No. 351,761, Feb. 24, 1982, abandoned. This application Nov. 19, 1984, Ser. No. 672,931

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.[4] B01D *75/38*

U.S. Cl. 210—248 **20 Claims**



1. A filter cartridge adapted to remove contaminants from liquid fuel comprising:

(a) a body;

(b) filter means including at least a first filter media disposed within said body;

(c) a first contaminant outlet disposed on a first side of said body, at least one second contaminant outlet disposed on said first side, and said first contaminant outlet is upstream of all of said filter means and said second contaminant outlet is upstream of at least a portion of said filter means;

(d) a fuel inlet port and a fuel outlet port disposed on a second side of said body, said second side opposite said first side; and

(e) threads on said first side for removably attaching a collection bowl unit to said body to receive contaminants passed out through said first and second contaminant outlets; and wherein said first contaminant outlet is surrounded by a mating portion disposed on said first side, said mating portion adapted for mating to a wall on a collection bowl unit when said threads removably attach a collection bowl unit to said body, and wherein said second contaminant outlet is outside of said mating portion.

4,565,630

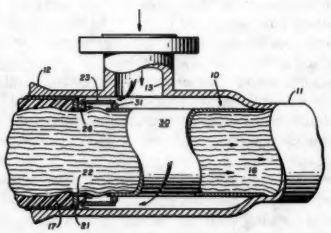
FLUID DISTRIBUTION SYSTEM FOR SEPARATION MODULES

Charles J. Runkle, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 26, 1984, Ser. No. 665,424

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—321.1 **5 Claims**



1. A fluid distribution system for a fluid separation module having a bundle of hollow fiber membranes positioned in a cylindrical shell and extending through a tube sheet positioned in an enlarged end portion of the shell, the enlarged end portion of the shell having therein an inlet opening for the admission of a fluid mixture into the shell, comprising:

(a) a first sleeve attached to the tube sheet in a position enclosing the bundle of fibers, said first sleeve having a distal end spaced from the tube sheet,

(b) a second sleeve positioned to enclose the fiber bundle, said second sleeve being spaced from the tube sheet to provide a first annular opening for the passage of the fluid mixture in a radial direction toward the first sleeve, said second sleeve surrounding the distal end of the first sleeve and having a diameter greater than the diameter of the first sleeve to provide a second annular opening for flow of the fluid mixture in an axial direction between said first and second sleeves,

(c) means securing the first and second sleeves together at spaced points therearound to hold the second sleeve in a position concentric with the first sleeve,

(d) a third sleeve enclosing the fiber bundle and being spaced from the first sleeve to provide a third annular opening therebetween for the axially flowing fluid mixture to enter the fiber bundle at an oblique angle, and

(e) means for securing the second sleeve to the third sleeve.

4,565,631

BACKFLOW-TYPE SELF-CLEANING FILTER

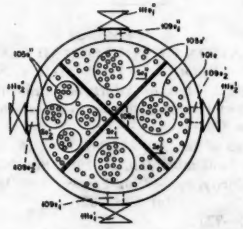
Klaus M. Bitzer, Krefeld; Klaus Eimer, Ratingen; Klaus Grobe, Duisburg; Georg Mayer, and Dieter Patzig, both of Ratingen, all of Fed. Rep. of Germany, assignors to Taprogge Gesellschaft mbH, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 477,814, Mar. 22, 1983, and a continuation-in-part of Ser. No. 477,862, Mar. 22, 1983. This application Dec. 19, 1983, Ser. No. 562,866

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246718; Feb. 22, 1983, 3306003

Int. Cl.[4] B01D *35/22*

U.S. Cl. 210—333.1 7 Claims



1. A self-cleaning filter for use with a cylindrical conduit generally axially traversed by a liquid to be cleaned, comprising:

(a) a cylindrical housing connectable to a conduit for generally axial flow of liquid therethrough;

(b) substantially radial partition means located in said housing and extending generally axially therethrough between upstream and downstream planes transverse to the axis of said housing and dividing the interior of said housing into a plurality of compartments of generally sectoral shape as viewed axially of said housing, and said compartments being provided with wide-open entrances at their upstream boundaries;

(c) respective sieve means associated with each of said compartments each for filtering the liquid flowing through its associated compartment, each of said sieve means including at least one substantially cylindrical portion having an axis oriented substantially parallel to the axis of said housing and further having first and second ends of which the former is unobstructed and the latter is not obstructed, a first substantially flat portion constituting a rim structure surrounding said first end of said substantially cylindrical portion and extending laterally therefrom to the proximate boundary surfaces of the associated compartment, a second substantially flat portion constituting the obstruction at said second end of said cylindrical portion and having its periphery spaced from said proximate boundary surfaces of the associated compartment and said cylindrical portion, and said first and second flat portions being perforated to form a sieve;

(d) a plurality of drainage outlet ports incorporated in said housing and each communicating laterally with a respective one of said compartments, and a plurality of shutoff valve means associated with said drainage outlet ports, respectively, and normally activated to block the same to inhibit drainage of liquid from said compartments through said drainage outlet ports; and

(e) respective flap means movably mounted in each of said compartments of said housing, said flap means each having a generally sectoral shape corresponding to that of the respective one of said compartments and being arranged in that compartment for selective disposition across the entire upstream boundary of the same to inhibit entry of liquid thereinto, and means operatively interconnecting each of said flap means and the associated one of said shutoff valve means which enables said shutoff valve means associated with any given compartment to be deactivated, so as to unblock the respective drainage output port, upon the respective one of said flap means being disposed across the upstream boundary of that compartment thereby closing said compartment while the other valves remain activated and the other compartments remain open;

(f) of liquid through the respective sieve means associated with said given compartment, is generated when said shutoff valve means associated with said given compartment is deactivated, while the shutoff valve means associated with each other compartment remains activated and in its normal drainage blocking state, and while the flow of liquid through each such other compartment continues in order to dislodge filtered-out impurities from the upstream surface of said respective sieve means.

4,565,632

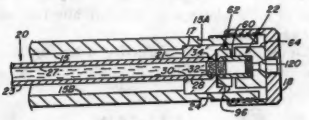
CHROMATOGRAPHIC CARTRIDGE COLUMN SYSTEM

Richard G. Hatch, Berkeley, and Gary Tepermeister, Pleasant Hill, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 11, 1985, Ser. No. 690,565

Int. Cl.[4] B01D *15/08*

U.S. Cl. 210—656 12 Claims



1. A liquid chromatography cartridge column assembly including an analytical column having an analytical column bore and a precolumn having a precolumn bore, comprising:

a holder body having a bore therein;

a first end cap mounted upon an end of the analytical column, the first end cap having a first end configured to fit slidably within the bore;

stop means for limiting movement of the first end cap within the bore;

a second end cap mounted upon an end of the precolumn, the second end cap having a portion configured to abut the first end cap to form a fluid flow path between the analytical column bore and the precolumn bore; and

means cooperating with said stop means for forming a seal between the first and second end caps and around the fluid flow path.

4,565,633

REMOVAL OF DISSOLVED HEAVY METALS FROM AQUEOUS WASTE EFFLUENTS

Krishna V. Mayenkar, Glendale Heights, Ill., assignor to Harza Engineering Company, Chicago, Ill.

Filed May 8, 1984, Ser. No. 608,351

Int. Cl.[4] C02F *1/42*

U.S. Cl. 210—688 18 Claims

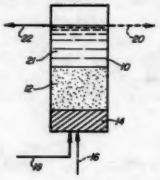
13. An environmentally-compatible process for the removal of toxic heavy metals from aqueous effluent comprising the steps of:

(a) providing a bed of iron particulates having at least 50% by weight pure iron, 50% or more of the particulates having a mesh size in the range of about 10 to 80 (U.S. Standard Sieve Series);

(b) flowing an aqueous medium at a temperature in the range of about 40° F. to 140° F. and a pH in the range of about 7 to 10 upwardly through said bed in the presence of air so as to form an upwardly rising interface of iron particulates, air and aqueous medium for a period sufficient to

react at least a substantial portion of the iron particulates with oxygen and water so as to form active iron surfaces having enhanced adsorptive properties for said heavy metals, the flow rate of said aqueous medium being insufficient to cause agitation of said bed or entrainment of said iron particulates in said aqueous medium;

(c) thereafter and without allowing the adsorptive surfaces so formed to dry, flowing the aqueous effluent to be treated through the bed at a temperature in the range of



about 40° F. to 140° F. and a pH in the range of about 7 to 10, whereby the iron particulates with adsorptive surfaces intimately contact the effluent and toxic heavy metals are adsorbed on said adsorptive surfaces;

(d) periodically discontinuing the flow of aqueous effluent through the bed, replacing the exhausted bed with a fresh bed of particulates as in step (a), and repeating steps (b), (c) and (d); and

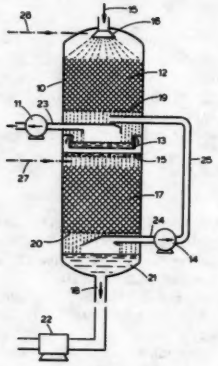
(e) disposing of the exhausted bed having adsorbed heavy metals thereon as a scrap iron charge to other processing.

4,565,634

METHOD FOR THE REMOVAL OF OXYGEN FROM WATER

Aksel Lydersen, Trondheim, Norway, assignor to Sintef, Trondheim, Norway

Filed Nov. 30, 1983, Ser. No. 557,229
Claims priority, application Norway, Dec. 28, 1982, 824395
Int. Cl.⁴ B01D *19/00*
U.S. Cl. 210—718 **5 Claims**



1. A method for removing oxygen from water, said method comprising:

providing a vacuum tower having therein at least one stage including a packing;

introducing water containing oxygen and nitrogen into the top of said tower and passing said water downwardly through said packing;

maintaining said stage under a vacuum, thereby liberating oxygen and water vapor from said water during downward passage thereof through said packing, and thereby liberating nitrogen from said water at the top of said stage;

drawing off from the bottom only of said stage a mixture of liberated gases and water vapor and thus separating said mixture from said water, thereby drawing said nitrogen released from said water at the top of said stage downwardly through said stage in cocurrent flow with said water, and causing said nitrogen to act as an internal stripping gas to facilitate removal of said oxygen from said water, until said nitrogen is drawn off from said bottom only of said stage with said liberated oxygen and water vapor; and

discharging from the bottom of said tower said water having oxygen liberated therefrom.

4,565,635

FLOCCULATION OF AQUEOUS MEDIA WITH NOVEL FLOCCULATING ADJUVANT

Yannick Le Du, Maisons Alfort, and Francois Meiller, Palaiseau, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Continuation of Ser. No. 442,002, Nov. 16, 1982, abandoned.
This application Jan. 25, 1983, Ser. No. 460,770
Claims priority, application France, Nov. 16, 1981, 81 21360
Int. Cl.⁴ C02F *1/54*
U.S. Cl. 210—727 **33 Claims**

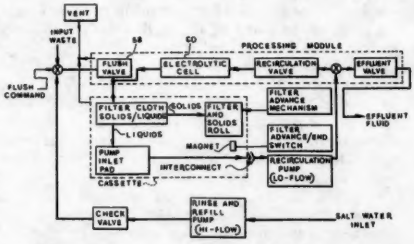
1. In a process for the treatment/purification of an aqueous medium by flocculation, the improvement which comprises, utilizing as a flocculant adjuvent therefor, that composition of matter adapted for ready dispersion/dissolution in said aqueous medium comprising intimate admixture of a water soluble gum, polymer or biogum heteropolysaccharide, and a dispersion/dissolution enhancing amount of a water donor material and water associated with said water donor said flocculant adjuvent comprising from 30 to 70% by weight of the water soluble gum, polymer or biogum heteropolysaccharide; from 7 to 40% by weight of the water donor; and from 15 to 37% by weight of water associated with said water donor.

4,565,636

SELF-CONTAINED FLOW THROUGH SEWAGE WASTE DISPOSAL SYSTEM

Kenneth J. DeGraw, Montvale; Brian Wilcockson, Wayne; Earl W. Nickerson, Ocean City; William R. Bocchini, Wyckoff; Armen Bogossian, Teaneck, and Steve Proios, Northvale, all of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 320,599, Nov. 12, 1981, Pat. No. 4,433,443.
This application Nov. 9, 1983, Ser. No. 550,476
The portion of the term of this patent subsequent to Jan. 14, 2000, has been disclaimed.
Int. Cl.⁴ C02F *9/00*
U.S. Cl. 210—748 **12 Claims**



1. A method of disposing of sewage waste within a self-contained flow-through system comprising; providing a toilet bowl adapted to receive human waste and fluid for diluting the waste, transporting the waste and rinsing the bowl, placing a removable filter cassette in alignment and in communication

with the toilet bowl, filtering the fluid and separating particles of solid material from the fluid received from the bowl, storing the solid material in a compact manner in the cassette for subsequent disposal upon removal of the cassette from alignment with the toilet bowl, transporting fluid other than human waste fluid from an external source upon initiation of each waste treatment sequence through interconnected conduits in the system to fill the bowl after a flush, to transport and recirculate filtered fluid through the system for further waste disposal treatment and to direct the effluent fluid from the system thereafter, and controlling by control means the passage of the fluid through the system to facilitate the collection and disposal of sewage waste within the system in a predetermined waste treatment sequence with fluid from the external source being introduced into the system, flowing through and being discharged from the system in each operational sequence.

4,565,637

METHOD OF, AND APPARATUS FOR, FILTERING A SLURRY

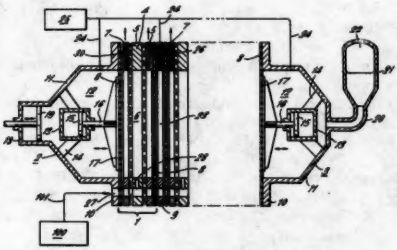
Kenneth W. Pearce, Hartlepool, England, assignor to Steetley Refractories Limited, England

Filed Dec. 16, 1983, Ser. No. 562,010

Claims priority, application United Kingdom, Dec. 22, 1982, 8236501

Int. Cl.⁴ B01D *37/00*; C02F *1/00*

U.S. Cl. 210—770 **9 Claims**



1. A method of filtering a slurry, comprising confining filter cake produced from the slurry in a stationary chamber having a pair of opposed flexible walls at least one of which is constituted by a filter medium compressing the filter cake in the chamber by hydraulic fluid pressure acting on said walls; and cyclically deforming the filter cake, while under compression in the chamber by said hydraulic fluid pressure inducing pressure oscillations in said hydraulic fluid acting on said walls of the chamber to cause the filter cake to bow alternately from side to side of an initial central plane.

4,565,638

METHOD FOR PURIFYING INK

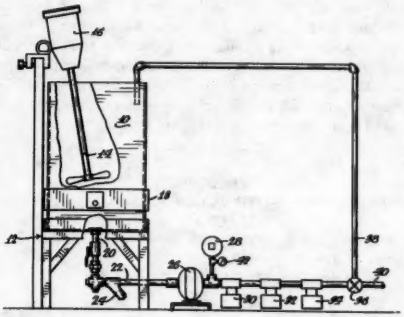
Jerry Zucker, 16 Buckingham Dr., Charleston, S.C. 29407

Filed Sep. 22, 1983, Ser. No. 534,676

Int. Cl.⁴ B01D *35/18*; C02B *1/02*

U.S. Cl. 210—774 **4 Claims**

1. Method for purifying used printing ink containing impurities comprising the steps of first combining a volume of the used ink with a greater volume of virgin ink to reduce the level of impurities in the combined volume, heating and agitating the



mixture to reduce the viscosity thereof, and then removing the impurities from the heated mixture.

4,565,639

METHOD OF INCREASING HYDROCARBON PRODUCTION BY REMEDIAL WELL TREATMENT

Glenn S. Penny, and James E. Briscoe, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 456,473, Jan. 7, 1983, abandoned. This application Feb. 7, 1985, Ser. No. 699,227

Int. Cl.⁴ C09K *7/00*; E21B *43/25*

U.S. Cl. 252—8.55 B **13 Claims**

1. A method of increasing the production of hydrocarbons from a hydrocarbon-containing subterranean formation having impaired permeability as a result of formation invasion by aqueous fluids comprising contacting said formation with a penetrating solvent capable of disrupting a least a portion of any aqueous layer present on solid surfaces within said formation and a cationic perfluoro compound whereby said compound is adsorbed onto said solid surfaces of said formation said cationic perfluoro compound being selected from the group consisting of a compound or mixtures of compounds represented by the formula:

$$F(CF_2)_x CH_2CH_2O(CH_2CHO)_w(CH_2CHO)_y(CH_2CHO)_z H$$

$$\begin{array}{lll} | & | & | \\ R & CH_2 & CH_2 \\ & | & | \\ & A & Q^{(+)}\,A^{(-)} \end{array}$$

wherein x is an integer from 2 to 12 or an integer or fractional integer representing an average value of from 2 to 12; w and y are both individually integers from 0 to 20 or integers or fractional integers representing average values of from 0 to 20; z is an integer from 0 to 20 or an integer or fractional integer representing an average value of from 0 to 20, the sum of y and z being from 1 to 20; R is a hydrogen, methyl, ethyl or propyl radical, or mixtures thereof; A is a halogen chosen from chlorine, bromine or iodine; and Q is a cationic nitrogen radical from the group consisting of an aromatic amino radical, a heterocyclic amino radical, and an amine radical represented by the formula:

$$\begin{array}{c} | \\ R_1—N—R_3 \\ | \\ R_2 \end{array}$$

wherein R_1, R_2 and R_3 are from the group consisting of

hydrocarbon radicals containing from 1 to 30 carbon atoms, aromatic hydrocarbon radicals such as phenyl and any alkyl substituted phenyl radical, and hydrogen radicals, provided that at least one of R_1, R_2 and R_3 is an aliphatic hydrocarbon radical containing from 1 to 30 carbon atoms or an aromatic hydrocarbon and that when any one of R_1, R_2 and R_3 radicals contains more than four aliphatic carbon atoms or an aromatic hydrocarbon, the other two radicals are each chosen from the group consisting of hydrogen, methyl and ethyl radicals.

4,565,640

AQUEOUS COMPOSITIONS CONTAINING CYANURIC ACID

Chris F. Parks, Tulsa, Okla., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 24, 1984, Ser. No. 685,808

Int. Cl.[4] E21B *43/26*

U.S. Cl. 252—8.55 R **3 Claims**

1. An aqueous controlled viscosity composition containing: (1) about 0.1% to about 1.0% xanthan gum, (2) about 0.025% to about 1.5% alkali metal or alkaline earth metal hypochlorite, and (3) about 0.005% to about 0.5% cyanuric acid.

4,565,641

BLEND OF FLUOROCHEMICAL GUANIDINES AND POLY(OXYALKYLENES)

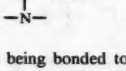
John C. Chang, New Brighton, and Kathryn L. Williams, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 440,317, Nov. 9, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 633,977

Int. Cl.[4] D06M *13/08*

U.S. Cl. 252—8.75 **20 Claims**

1. A composition comprising a blend of: (a) a normally solid, water-insoluble, fluorochemical guanidine composition which is a fluoroaliphatic radical-containing, substituted guanidine compound, or composition comprising a mixture of such compounds, said compound having one or more monovalent fluoroaliphatic radicals, having at least three fully fluorinated carbon atoms, and one or more substituted guanidino moieties, which moieties can be represented in terms of the formula



said radicals and moieties being bonded together by linking groups selected from aliphatic, aromatic, oxy, thio, carbonyl, sulfone, sulfoxy, —N(CH_3)—, sulfonamido, carbonamido, sulfonamidoalkylene, carbonamidoalkylene, carbonyloxy, urethane, and urea groups, and combinations thereof, with the proviso that when only one guanidino moiety is present, and only two organic substituents are in said guanidino moiety, said substituents must be on different nitrogen atoms of the moiety, and when more than one guanidino moiety is present, said moieties are bonded together by divalent linking groups selected from the group consisting of alkylene, aralkylene, arylene, polyoxyalkylene, and combinations thereof and can contain said fluoroaliphatic radical; and (b) a normally liquid or low melting solid, water soluble or dispersible, fluoroaliphatic radical-containing poly(oxyalkylene), or composition comprising a mixture of such poly(oxyalkylenes), said poly(oxyalkylene) having one or more of said fluoroaliphatic radicals and one or more poly(oxyalkylene) moieties, said radicals and poly(oxyalkylene) moieties bonded together by linking groups selected from aliphatic, aromatic, oxy, thio, carbonyl, sulfone, sulfoxy, phosphoxy, and amine groups and combinations thereof.

4,565,642

PIEZOELECTRIC SUBSTANCES

Shigeru Jyomura, Tokyo, and Hiroshi Takeuchi, Matsudo, both of Japan, assignors to Hitachi, Ltd. and Hitachi Medical Corp., both of Tokyo, Japan

Filed Jul. 13, 1983, Ser. No. 513,424

Claims priority, application Japan, Jul. 14, 1982, 57-121156; Sep. 10, 1982, 57-156746; Nov. 4, 1982, 57-192481; Dec. 22, 1982, 57-223810

Int. Cl.[4] C04B *35/49*

U.S. Cl. 252—62.9 **2 Claims**

1. A piezoelectric substance, which consists essentially of a binary solid solution having a composition represented by the general formula:

$$xPbZrO_3—yA$$

wherein $0.905 \leqq x \leqq 0.960$ and $x+y=1.00$ and A is a substance selected from the group consisting of $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3$, $Pb(Sb_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{3}}W_{\frac{1}{3}})O_3$, $Pb(Sb_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, and $Pb(Fe_{\frac{2}{3}}Te_{\frac{1}{3}})O_3$, the binary solid solution having an electromechanical coupling factor of thickness vibration mode kt of at least 0.46 and an electromechanical coupling factor ratio kt/kp of at least 9.2.

2. A piezoelectric substance, which consists essentially of a ternary solid solution having a composition represented by the general formula:

$$xPbZrO_3—yA—zPbTiO_3$$

and having a composition ratio represented by coordinate in a quadrilateral formed by successively connecting point P (x=0.905; y=0.095; z=0.000), point Q (x=0.960; y=0.040; z=0.000), point R (x=0.932; y=0.005; z=0.063), point S (x=0.905; y=0.005; z=0.090) and said P by straight lines, including the respective lines except the straight line connecting point P to point Q, in a ternary composition diagram showing the composition of said ternary solid solution, and said A being a substance selected from the group consisting of $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Mn_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, $Pb(Fe_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Sb_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3$, $Pb(Sb_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, $Pb(Mn_{\frac{1}{3}}W_{\frac{1}{3}})O_3$, $Pb(Sb_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3$, $Pb(Fe_{\frac{1}{2}}Ta_{\frac{1}{2}})O_3$, and $Pb(Fe_{\frac{2}{3}}Te_{\frac{1}{3}})O_3$, the ternary solid solution having an electromechanical coupling factor of thickness vibration mode kt of at least 0.46 and an electromechanical coupling factor ratio kt/kp of at least 9.6.

4,565,643

ANTIFREEZING AGENT

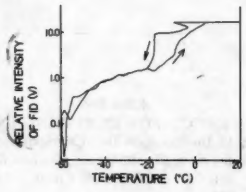
Soichi Arai, Yokohama, and Michiko Watanabe, Matsudo, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 7, 1984, Ser. No. 648,216

Claims priority, application Japan, Apr. 24, 1984, 59-82553

Int. Cl.[4] C09K *5/06*

U.S. Cl. 252—70 **10 Claims**



1. A method for preventing destruction in biological tissues

caused from the formation of ice crystals during exposure to a low temperature or a frozen state, said method comprising; contacting the biological tissues with an anti-freezing agent comprising, in an aqueous medium system, a protein which is enzymatically modified with the covalent incorporation of an amino acid ester.

7. The method of claim 1, wherein the enzymatically modified protein is a product prepared by covalently attaching leucine dodecyl ester to gelatin by the action of papain.

4,565,644

FLOOR CLEANING AND WAXING COMPOSITION

James A. Smith, Old Tappan, and Betty J. Murphy, Upper Montclair, both of N.J., assignors to Creative Products Resource Associates, Ltd., Clifton, N.J.

Division of Ser. No. 688,864, Jan. 4, 1985, Pat. No. 4,537,914, which is a continuation-in-part of Ser. No. 511,185, Jul. 6, 1983, which is a continuation-in-part of Ser. No. 660,350, Oct. 12, 1984, abandoned. This application May 30, 1985, Ser. No. 739,129

Int. Cl.[4] C11D *17/00*

U.S. Cl. 252—92 10 Claims

1. A composition for cleaning flooring of soiled wax deposits and depositing a fresh coating of wax thereupon comprising moist shreds of a hydrophilic polyurethane foam comprising an open-celled highly reticulated matrix, wherein said matrix incorporates an interior aqueous phase and an effective scouring amount of abrasive particles silane coupled within said matrix, and wherein said shreds incorporate a wax which is partially released from said shreds as an aqueous emulsion when the shreds are contacted with the flooring under conditions of pressure.

4,565,645

SINGLE-STAGE PROCESS FOR THE PRODUCTION OF POLYAMINES AND POLYAMINES PRODUCED BY SUCH PROCESS

Werner Rasshofer, Cologne, and Dieter Dieterich, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,263

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223397

Int. Cl.[4] C09K *3/00;* C08G *18/08, 18/20, 18/10*

U.S. Cl. 252—182 15 Claims

1. A single stage process for the production of a polyamine containing primary amino groups comprising hydrolyzing (a) an isocyanate compound having an NCO-content of from 0.5 to 40 wt % with (b) an excess of water in the presence of (c) from 0.01 to 25 wt % of a compound selected from the group of alkali carbonates and hydrogen carbonates, alkali and alkaline earth salts of monocarboxylic and polycarboxylic acids, and mixtures thereof in the presence of (d) a water-miscible polar solvent in a quantity of at least 10 parts by weight solvent for each 100 parts by weight isocyanate compound at a temperature of from 50 to 165° C. in a manner such that (a), (b), (c) and (d) are kept substantially homogeneous during the hydrolysis reaction.

4,565,646

WOOL WAX ACID HYDROGENATION PRODUCTS USEFUL AS EMULSIFIERS

Wolfgang Hofeditz, Hamburg, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 404,770, Aug. 3, 1982, abandoned, which is a continuation of Ser. No. 189,391, Sep. 19, 1982, abandoned. This application Feb. 29, 1984, Ser. No. 584,638

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938656

Int. Cl.[4] B01J *13/00*

U.S. Cl. 252—309 9 Claims

1. An emulsifier for oil-in-water emulsions consisting essentially of a substantially steroid-free wool-wax alcohol free of α,ω-diols prepared by subjecting

(a) wool-wax esters of mono- or multivalent alcohols of 1 to 6 carbon atoms or

(b) wool-wax acids optionally containing monovalent aliphatic alcohols of 1 to 6 carbon atoms to catalytic hydrogenation at a pressure of 170 to 300 bars and a temperature of 200° to 300° C. in the presence of a high pressure hydrogenation catalyst to obtain substantially steroid free wool wax alcohols and removing therefrom α,ω-diols.

4,565,647

FOAMING SURFACTANT COMPOSITIONS

Ramon A. Llenado, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 371,747, Apr. 26, 1982, abandoned, and Ser. No. 282,976, Jul. 13, 1981, abandoned. This application Jul. 12, 1982, Ser. No. 395,751

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.[4] B01F *17/02, 17/12, 17/56;* B01J *13/00*

U.S. Cl. 252—354 10 Claims

1. A foaming composition comprising

(1) an alkylpolysaccharide surfactant having the formula $RO(R^1O)_t(Z)_x$ where Z is a moiety derived from a reducing saccharide containing from 5 to 6 carbon atoms and wherein R is a hydrophobic group selected from the group consisting of alkyl, alkylphenyl, hydroxyalkylphenyl and hydroxyalkyl groups and mixtures thereof in which said alkyl groups contain from about 8 to about 20 carbon atoms; R^1 contains from 2 to about 4 carbon atoms; t is from 0 to about 30; and x is a number from about 1.5 to about 10;

(2) an anionic cosurfactant selected from the group consisting of sulfates, sulfonates, carboxylates and mixtures thereof, neutralized with one or more cationic moieties,

the ratio of (2) to (1) being from about 1:10 to about 10:1 except that when the cosurfactant is an alkylbenzene sulfonate, the ratio of (2) to (1) is at least about 1:2, and when the cosurfactant is soap the ratio of (2) to (1) is at least about 1:2, and when the anionic cosurfactant does not contain a sulfonate or carboxylate x must be from 1.5 to 3 and the alkylpolysaccharide surfactant must have a free fatty alcohol content of less than about 2% by weight.

4,565,648

USE OF CARBONYL COMPOUNDS, SULFONYL COMPOUNDS AND/OR THIOUREAS AS STABILIZERS FOR SOLUTIONS CONTAINING PYROCARBONIC ACID DIALKYL ESTERS AND POLYISOCYANATE PREPARATIONS CONTAINING THOSE ESTERS

Richard Kopp, Cologne, and Wolfgang Reichmann, Hilden, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 15, 1983, Ser. No. 523,300

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231397

Int. Cl.[4] A61K *31/265*

U.S. Cl. 252—397 4 Claims

1. A process for the production of storage-stable solutions of pyrocarbonic acid dialkyl esters in organic liquids inert to these esters comprising adding to said esters one or more members selected from the group consisting of urea, N-alkyl ureas, N-aryl ureas, N,N'-diaryl ureas, thiourea, sulfamide, N-aryl sulfamides, N,N'-diarylsulfamides, aliphatic or aromatic sulfonic acid amides, sulfuric acid dialkyl esters, aliphatic and aromatic carboxylic acid halides, aliphatic and aromatic sulfonic acid halides, aliphatic and aromatic carbonyl isocyanates, aliphatic and aromatic sulfonyl isocyanates, and aliphatic and aromatic carboxylic acid anhydrides.

4,565,649
GRAPHITE INTERCALATION COMPOUNDS

F. Lincoln Vogel, Whitehouse Station, N.J., assignor to Intercal Company, Port Huron, Mich.

Continuation of Ser. No. 206,647, Nov. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 499,834, Aug. 23, 1974, abandoned. This application Jul. 30, 1984, Ser. No. 635,940

Int. Cl.[4] H01B *1/04*

U.S. Cl. 252—503 17 Claims

1. A process for preparing a conductor for transmission of electricity, which comprises reacting graphite with a Bronsted acid selected from hydrogen fluoride, hydrogen chloride, hydrogen bromide, nitric acid, nitrous acid, sulfuric acid or perchloric acid and an electron acceptor metal halide selected from a boron trihalide, a pentahalide of a Group V A or B metal, a tetrahalide of a Group IV A or B metal, or mixtures thereof wherein the molar ratio of the Bronsted acid to metal halide ranges from about 0.01:1 to about 100:1, the reaction is conducted under a substantially moisture free, inert atmosphere, at a temperature of at least about 10° C. and the Bronsted acid and metal halide or boron trihalide are in a liquid or gas phase, said reaction producing a graphite intercalation compound; and shaping said graphite intercalation compound into a form adapted for the conduction of electricity.

4,565,650
PROCESS FOR N-DOPING OF POLYMERS

Bernard Francois, Strasbourg, and Claude Mathis, Truchtersheim, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Jul. 20, 1984, Ser. No. 633,122

Claims priority, application France, Jul. 21, 1983, 83 12075

Int. Cl.[4] C08F *8/42, 138/02;* H01B *1/12;* H01L *29/28*

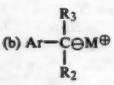
U.S. Cl. 252—518 24 Claims

1. A process for the production of N doped polyacetylene and polyphenylene which comprises:

contacting the polymer with a doping agent, in a solvent for the doping agent, wherein the doping agent is selected from the group consisting of compounds of formula

(a) R_1-Li (I)

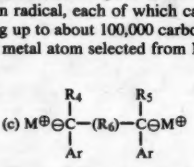
wherein R_1 is an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms;



(II)

(b) $Ar-C\ominus M^{\oplus}$ with R_3 and R_2 on the carbon

wherein Ar is an aryl radical containing up to about 3 rings which can be fused, a 2-pyridyl or a 4-pyridyl radical, R_2 and R_3 are identical or different and represent hydrogen, an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms and M represents an alkali metal atom selected from Na, K, Li, Cs and Rb; and



(III)

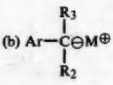
(c) $M^{\oplus}\ominus C-(R_6)-C\ominus M^{\oplus}$ with R_4, R_5 and Ar, Ar

wherein Ar and M are as defined above, R_4 and R_5 independently represent hydrogen, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical and an aryl containing up to about 3 rings which can be fused, R_6 represents a saturated or unsaturated bivalent hydrocarbon radical each of which can be a polymeric chain containing up to about 100,000 carbon atoms.

18. An N-doped polymer comprising polyacetylene or polyphenylene and an N-doping effective amount of a dopand comprising at least one compound selected from the group consisting of compounds of the formula

(a) R_1-Li (I)

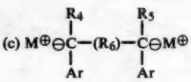
wherein R_1 is an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms;



(II)

(b) $Ar-C\ominus M^{\oplus}$ with R_3 and R_2 on the carbon

wherein Ar is an aryl radical containing up to 3 rings, which can be fused, a 2-pyridyl or a 4-pyridyl radical, R_2 and R_3, are identical or different and represent hydrogen, an aryl radical, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical, each of which can be a polymeric chain containing up to about 100,000 carbon atoms and M represents an alkali metal atom selected from Na, K, Li, Cs and Rb; and



(III)

(c) $M^{\oplus}\ominus C-(R_6)-C\ominus M^{\oplus}$ with R_4, R_5 and Ar, Ar

wherein Ar and M are as defined above, R_4 and R_5 independently represent hydrogen, a saturated hydrocarbon radical, an unsaturated hydrocarbon radical and an aryl containing up to about 3 rings which can be fused, R_6 represents a saturated or unsaturated bivalent hydrocarbon radical each of which can be a polymeric chain containing up to about 100,000 carbon atoms wherein R_1, R_2, R_3, R_4, R_5, R_6, and M are as defined above.

4,565,651
METHOD OF LYOPHILIZING COLD INSOLUBLE GLOBULIN

Takao Ohmura, Takarazuka; Yutaka Hirao; Takuji Hanamura, both of Toyonaka; Akimasa Ohmizu, Hirakata, and Satoshi Funakoshi, Katano, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Oct. 3, 1983, Ser. No. 538,572

Claims priority, application Japan, Oct. 7, 1982, 57-176917

Int. Cl.[4] C07G *7/00;* A61K *35/14*

U.S. Cl. 260—112 B 10 Claims

1. A method of lyophilizing an aqueous solution of a cold insoluble globulin containing from about 0.1 to 10% w/v cold insoluble globulin which has been purified by heat treatment to a pharmaceutically acceptable degree, said method comprising lyophilizing the aqueous solution to which from about 0.25 to 5% w/v albumin and from about 1 to 10% w/v of at least one stabilizer selected from the group consisting of neutral amino acids, monosaccharides, disaccharides, and sugar alcohols have been added, the amounts of albumin and the stabilizer being sufficient for preventing the occurrence of turbidity when the lyophilized cold insoluble globulin is dissolved in water.

4,565,652

PROCESS FOR REMOVING LIPOPROTEINS USING DERIVATIZED POLYHYDROXYMETHYLENE

Rudolf Schmidtberger, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Aug. 23, 1984, Ser. No. 643,465

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1983, 3330648

Int. Cl.[4] C07G 7/00; G01N 33/92

U.S. Cl. 260—112 B 4 Claims

1. A process for removing lipoproteins from an aqueous fluid, which comprises bringing said fluid into contact with a polyhydroxymethylene onto which has been grafted an oxyethylated alcohol or an oxyethylated carboxylic acid and separating the fluid from said polyhydroxymethylene to which at least some of said lipoproteins have become bound.

4,565,653

ACYLTRIPEPTIDE IMMUNOSTIMULANTS

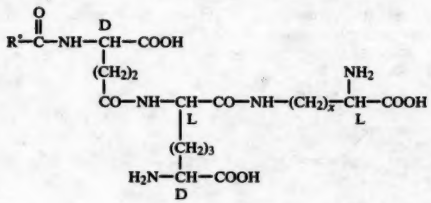
Jeffrey L. Ives, Guilford, and Frank C. Sciavolino, Niantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,169

Int. Cl.[4] C07C 103/52

U.S. Cl. 260—112.5 R 9 Claims

1. A compound having formula (I)



(I)

wherein R° is alkyl having from one to six carbon atoms, and x is an integer from 1 to 4.

4,565,654

N-ACYLOXY MONOCYCLIC β-LACTAMS

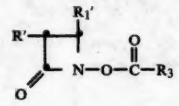
Marvin J. Miller, South Bend, Ind., assignor to University of Notre Dame Du Lac, Notre Dame, Ind.

Filed Mar. 28, 1983, Ser. No. 479,375

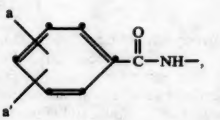
Int. Cl.[4] C07D 411/12

U.S. Cl. 260—239 A 12 Claims

1. A compound of the formula



wherein R' is amino, hydrogen, C_1–C_4 alkyl, carboxy, protected carboxy, C_1–C_4 alkyl mono-substituted by hydroxy, halogen, methoxy, amino, protected amino, carboxy, protected carboxy, or cyano; or R' is an acylamino group of the formulae



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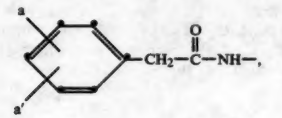
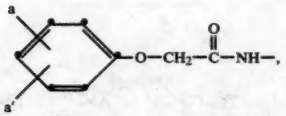
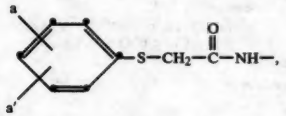
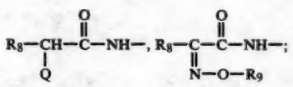
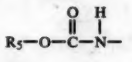




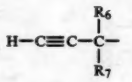




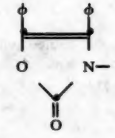
or a protected amino group selected from a group of the formula



wherein R_5 is C_1–C_5 alkyl, halo-substituted alkyl, C_3–C_5 alkenyl, C_3–C_6 cycloalkyl, adamantyl, diphenylmethyl, benzyl, substituted benzyl substituted by methoxy, methyl, halogen, or nitro; or R_5 is an alkinyl group of the formula



wherein R_6 and R_7 when taken separately are independently hydrogen, or C_1–C_3 alkyl, and when taken together with the carbon to which they are attached form a C_5–C_7 cycloalkyl group; or R' is a diphenyloxazolino group of the formula



wherein φ is phenyl; and where in the above R' acylamino groups, a and a' are independently hydrogen, halogeny, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, or cyano; R_8 is phenyl, thienyl, furyl, thiazolyl, oxazolyl, 1,3,4-thiadiazolyl, 1,2,4-oxadiazolyl, and such heterocyclic rings mono-substituted by amino, hydroxy, halogen, or methyl; Q is hydrogen, amino, hydroxy, carboxy, or methyl; and R_9 is C_1–C_4 alkyl, carboxymethyl, 1- or 2-carboxyethyl, or 2-carboxyprop-2-yl;

R'_1 is hydrogen, C_1–C_4 alkyl, protected carboxy, carboxy, phenyl, substituted phenyl substituted by C_1–C_4 alkyl, hydroxy, halogen, C_1–C_4 alkoxy, amino, protected amino, carboxy, protected carboxy, or cyano; or R'_1 is C_1–C_4 alkyl, mono-substituted by hydroxy, halogen, methoxy,

amino, protected amino, carboxy, protected carboxy, or cyano; and

R_3 is methyl, phenyl, or substituted phenyl substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, or nitro; and when R'_1 is C_1–C_4 alkyl substituted by amino, or Q is amino, the acid addition salts thereof.

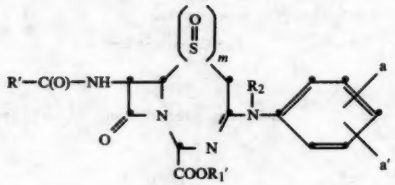
4,565,655

DIAZABICYCLONONENE ANTIBACTERIALS

Douglas O. Spry, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

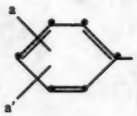
Filed Sep. 28, 1983, Ser. No. 536,473
Int. Cl.[4] C07D *513/04*
U.S. Cl. 260—245.2 R **6 Claims**

1. The process for preparing a compound of the formula



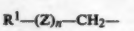
wherein R′ is hydrogen, C_1–C_5 alkyl, C_1–C_5 alkyl substituted by cyano or halogen;

a phenyl or a substituted phenyl group represented by the formula

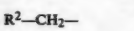


wherein a and a′ independently are hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, hydroxy, amino, acetylamino, carboxy, carboxymethyl, or trifluoromethyl;

a substituted methyl group of the formula



wherein R^1 is phenyl, substituted phenyl as defined above, cyclohex-1-ene or cyclohexa-1,4-diene, Z is O or S, and n is 0 or 1; a heteroarylmethyl group of the formula

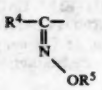


wherein R^2 is thienyl, furyl, tetrazolyl, thiazolyl, oxazolyl, isoxazolyl, thiadiazolyl, oxadiazolyl, wherein said hetero ring is optionally substituted by chloro, bromo, C_1–C_4 alkyl, amino, or protected amino;

a disubstituted methyl group of the formula

wherein R^3 is R^1 or R^2 as defined above, and Q is hydroxy, formyloxy, carboxy, amino, or sulfo;

an oximino group of the formula



wherein

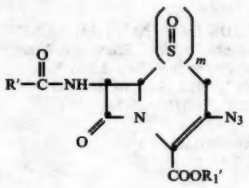
R^4 is R^1 or R^2 as defined above and R^5 is C_1–C_4 alkyl, monocarboxy-substituted C_1–C_7 alkyl, or monocarboxy-substituted C_3–C_7 cycloalkyl;

R_2 is hydrogen or C_1–C_3 alkyl;

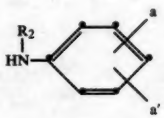
m is 0 or 1; and

R_1' is a carboxy protecting group;

which comprises heating in an inert solvent at a temperature between about 45° C. and about 95° C. a 3-azido-3-cephem ester of the formula



wherein R′, R_1' and m have the same meanings as defined above; with an aniline of the formula



wherein R_2, a and a′ have the same meanings as defined above.

4,565,656

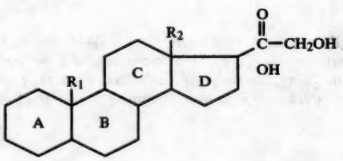
PREPARATION OF 17β-HYDROXYACETYL-17α-OL-STEROIDS

Lucien Nedelec, Le Raincy; Vesperto Torelli, and Michel Hardy, both of Maisons-Alfort, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jan. 27, 1982, Ser. No. 343,357
Claims priority, application France, Jan. 29, 1981, 81 01688
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.[4] C07J *3/00*
U.S. Cl. 260—397.47 **9 Claims**

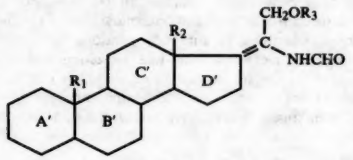
1. A process for the preparation of 17β-hydroxyacetyl-17α-ol steroids of the formula

I



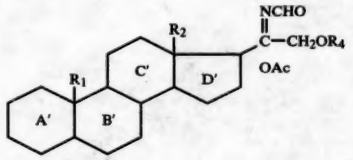
wherein R^1 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms optionally substituted with halogen or an oxygen or nitrogen function and alkenyl and alkynyl of 2 to 4 carbon atoms, R_2 is alkyl of 1 to 4 carbon atoms and the A,B,C, and D rings may contain one of more double bonds

and are optionally substituted with at least one member of the group consisting of hydroxy, keto, halogen, alkyl and alkoxy of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms comprising reacting a compound of the formula



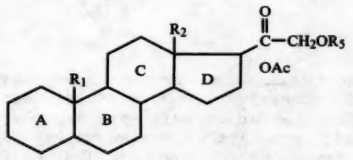
II

wherein R_1 and R_2 have the above definition, R_3 is selected from the group consisting of hydrogen and R_3', R_3' is a group protecting the hydroxyl and A', B', C' and D' have the same definition as A, B, C and D with the supplemental possibility of being substituted with a protected hydroxyl or protected ketone with a reactant capable of introducing an acetoxyl group selected from the group consisting of lead tetraacetate and idosobenzene diacetate to obtain a compound of the formula



III

wherein R_4 is selected from the group consisting of R_3' and acetyl and Ac is acetyl, reacting the latter with a hydrolysis agent to obtain a compound of the formula



IV

wherein R_1, R_2, A,B,C and D have the above definitions and R_5 is selected from the group consisting of hydrogen, a non-easily hydrolyzable hydroxy protective group and an acetyl group and reacting the latter to eliminate the acetyl group in the 17α-position and the R_5 group where it is other than hydrogen to obtain the corresponding compound of formula I.

4,565,657

PROCESS FOR THE PRODUCTION OF 17α-ACYLOXY-6-CHLORO-1α,2α-METHYLENE-3,20-DIONES

Klaus Junghans, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

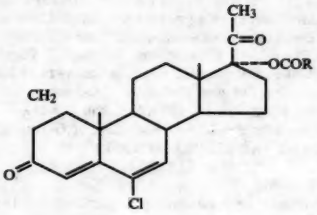
Filed Sep. 4, 1984, Ser. No. 647,211

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331824

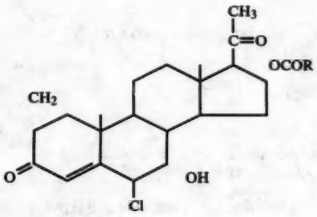
Int. Cl.⁴ C07J *1/00*

U.S. Cl. 260—397.4 **12 Claims**

1. A process for the production of a 17α-acyloxy-6-chloro-1α,2α-methylene-3,20-dione of the formula



wherein R is alkyl of up to 5 carbon atoms or phenyl comprising reacting a compound of the formula



wherein R is as defined above, in the presence of a strong acid, with a compound of the formula

wherein R' is hydrogen or alkyl of up to 4 carbon atoms and R'' represents alkoxy groups, alkylthio groups, dialkylamino groups or a combination thereof, with 1 to 4 carbon atoms in each alkyl radical.

4,565,658

OXIDATION AND AMMOXIDATION PROCESS

Jerry R. Ebner, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 500,518, Jun. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 254,231, Apr. 14, 1981, Pat. No. 4,405,498, which is a continuation-in-part of Ser. No. 104,625, Dec. 17, 1979, abandoned. This application Jan. 22, 1985, Ser. No. 693,634

Int. Cl.⁴ C07C *120/14, 120/00*

U.S. Cl. 260—465.3 **1 Claim**

1. A process for the ammoxidation of propylene to produce acrylonitrile comprising passing propylene along with ammonia and oxygen a\ an elevated temperature in the vapor phase over a catalyst consisting essentially of catalytic elements having the empirical formula

$$BiMo_aV_bSb_cM_dO_x$$

wherein a is from 0.5 to 2, b is from 0.12 to 3, c is from 0.12 to 10, d is from 0 to 0.5, and x is taken to satisfy the valence requirements of the other elements present, said catalyst being prepared by forming a mixture containing a preformed vanadium antimonate component and a bismuth molybdate component, forming said mixture into dry particles and calcining at a temperature of from 500° to 850° C., and wherein M is one or more elements selected from potassium, calcium, manganese, boron, phosphorus, titanium, zirconium, silver, and tungsten.

4,565,659

SUBSTITUTED AMINOALKANOL PHOSPHOLIPIDS

Hans-Heiner Lautenschläger, Pulheim; Harald Borbe, Cologne; Gerrit Prop; Ferdinand Wirtz-Peitz, both of Pulheim; Ille-Stephanie Doppelfeld, Giessen, and Michael J. Parnham, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

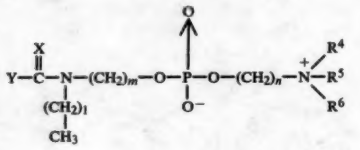
Filed Oct. 18, 1983, Ser. No. 543,149

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1982, 3239388; Oct. 25, 1982, 3239390

Int. Cl.[4] C07F *9/10*

U.S. Cl. 260—925 5 Claims

1. Substituted aminoalkanol phospholipids of the general Formula I



I

in which

X represents an oxygen or a sulphur atom and

Y the radical $-NR^1R^2$ or $-OR^3$,

wherein

R^1, R^2 can be the same or different and represent a saturated or unsaturated, straight-chained or branched alkyl radical having 1 to 20 carbon atoms, a benzyl radical, a phenyl radical or hydrogen,

R^3 represents phenyl, benzyl or C_{1-4}-alkyl

R^4, R^5, R^6 can be the same or different and represent hydrogen or a low alkyl radical having 1 to 4 carbon atoms,

l represents an integer from 0 to 19

m represents an integer from 2 to 6

n represents an integer from 2 to 4.

4,565,660

METHOD FOR DISPERSING GAS, FOR MIXING A PULVEROUS SOLID INTO A LIQUID TO FORM A SUSPENSION, AND FOR MAINTAINING THE OBTAINED GOOD SOLID-GAS-LIQUID SUSPENSION IN THE REACTOR

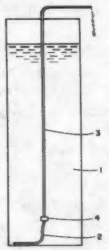
Stig-Erik Hultholm; Launo L. Lilja; Valto J. Mäkitalo, all of Pori, and Bror G. Nyman, Vanha-Ulvila, all of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Aug. 16, 1983, Ser. No. 523,732

Claims priority, application Finland, Aug. 24, 1982, 822937

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—121 R 6 Claims



1. A method for dispersing a gas into a liquid in a reactor, forming a good suspension of the three phases of said gas, said liquid and a pulverulent solid in the liquid and for maintaining the achieved good suspension in the reactor, said method comprising directing a gas jet below the surface of the liquid which contains said solid, by means of at least one flexible-structured dispersing member, said member having solid, imperforate walls with an outlet opening solely at its outermost end, the support point of the dispersing member being above the dispersing member at the bottom of the reactor and at the center point of its operating area, the full gas jet under pressure being dicharged freely from the outermost end of the dispersing member, changing its direction randomly whereby the dispersing member exerts a whip-like, repeating movement at the bottom of the reactor, which movement has a continuously decreasing radius of curvature, at the same time causing strong mechanical mixing and thereby producing a good suspension of the three different phases over the entire cross-sectional area of the reactor.

4,565,661

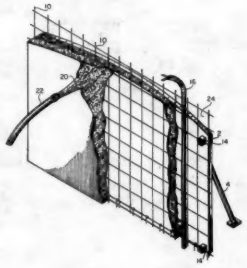
METHOD OF MOLDING A SHELTER STRUCTURE

Giacomo F. Michienzi, 282 Old Bedford Rd., Concord, Mass. 01742

Division of Ser. No. 220,353, Dec. 29, 1980, Pat. No. 4,366,942, and Ser. No. 220,354, Dec. 29, 1980, Pat. No. 4,381,853. This application Apr. 20, 1981, Ser. No. 255,766

Int. Cl.[4] B28B *19/00, 23/02;* E04B *1/16*

U.S. Cl. 264—34 7 Claims



1. Method for erecting a shelter structure comprising providing a substantially rigid and solid sheet member disposed in an upright position, said member having a substantially planar inside surface, providing brace means for retaining said rigid member in said upright position, providing a first panel of mesh material substantially parallel to and spaced from said inside surface of said rigid member to define substantially a void therebetween, attaching conduit means to said first mesh panel, projecting a cementitious material at said mesh panel and onto a majority of said inside surface of said rigid member from a side of said mesh panel remote from said void and forming an inside wall surface substantially parallel to said planar inside surface, thereby forming a first wall of cementitious material of substantially uniform thickness bounded on one side of said rigid member and having said mesh panel embedded therein, allowing said cementitious material to harden, and removing said brace means and said rigid member, whereby a leave standing said first wall devoid of said rigid member.

4,565,662

METHOD FOR THE PRODUCTION OF PARTICLE BOARDS

Björn Mansson; Kurt Sirenius, both of Sundsvall, and Birger Sundin, Nacka, all of Sweden, assignors to AB Casco, Stockholm, Sweden

Filed Apr. 29, 1983, Ser. No. 489,721

Claims priority, application Sweden, May 6, 1982, 8202856

Int. Cl.[4] D04H *1/64*

U.S. Cl. 264—113 10 Claims

1. A method for the production of particle boards by addi-

tion of a hydrophobic agent and a curable glue to wood based particles, formation of the particles into a mat and subsequent curing of the glue by application of heat and pressure, comprising the steps of

(a) adding a hydrophobic agent, which is solid or non-fluid at normal temperatures, to the wood based particles,

(b) maintaining both the hydrophobic agent and the wood based particles at temperatures above the melting temperature of the hydrophobic agent,

(c) maintaining contact under agitation between the heated hydrophobic agent and the heater wood based particles, so as to spread and distribute the hydrophobic agent over the surfaces of the particles, and

(d) subsequently adding a formaldehyde-based glue to the particles from step (c) before mat formation and pressing.

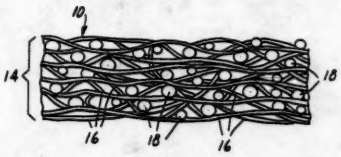
4,565,663
METHOD FOR MAKING WATER-SWELLABLE COMPOSITE SHEET

Louis A. Errede, North Oaks; James D. Stoesz, St. Paul, both of Minn., and George D. Winter, deceased, Bridgend, Wales (by Jenny Upton, legal representative), assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 444,199, Nov. 23, 1982, Pat. No. 4,460,642, which is a continuation-in-part of Ser. No. 277,990, Jun. 26, 1981, Pat. No. 4,373,519. This application Apr. 25, 1984, Ser. No. 603,607

Int. Cl.⁴ B29D *27/00, 7/14;* B29B *1/04*

U.S. Cl. 264—120 **17 Claims**



1. A method of preparing a tear-resistant composite sheet material having hydrophilic, absorptive particles enmeshed in a network of interlaced microfibrous polytetrafluoroethylene forming a fibril matrix, said hydrophilic absorptive particles being present in said matrix in the range of 1.0 to 10 parts particles per part polytetrafluoroethylene by weight, and said hydrophilic absorptive particles having absorptive capacity greater than 1.0 gram of water per gram of dry particle, said method comprising:

(1) dry blending one or more hydrophilic, absorptive particulate materials;

(2) admixing water to particulate in a weight ratio in the range of 1:2 to 10:1, to form a damp mixture, the water being present in a quantity insufficient to exceed the absorptive capacity of the particulate;

(3) adding gradually, with stirring, to said mixture an equal weight of an aqueous emulsion of polytetrafluoroethylene having in the range of 15 to 25 weight percent solids so that the resulting mass has a cohesive consistency;

(4) mixing said mass in an intensive mixer at a temperature between 50° C. and 100° C. for a time sufficient to cause initial fibrillation of said polytetrafluoroethylene particles;

(5) biaxially calendering said mass between calendering rolls maintained at about 50° C. to about 100° C. to cause additional fibrillation of said polytetrafluoroethylene particles to form a self-supporting sheet, while closing the gap between the calendering rolls with each successive calendering operation, for a time sufficient to produce a tear-resistant sheet having a tensile strength of at least 0.5 megapascal; and

(6) drying the resultant sheet to remove water.

4,565,664
DRAWN TUBING MANUFACTURING PROCESS AND APPARATUS THEREFOR

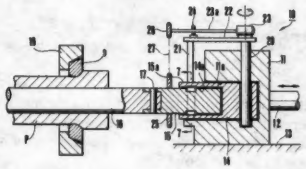
Shigeki Ikehata; Kuniharu Shutoh, and Kazuya Aoyagi, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 17, 1983, Ser. No. 476,274

Claims priority, application Japan, Mar. 18, 1982, 57-41744

Int. Cl.⁴ B29D *23/04*

U.S. Cl. 264—130 **15 Claims**



1. A process of manufacturing seamless tubing by using a press having a mandrel and a die, comprising: the steps of:

preparing a formed blank having a thick-walled cup shape;

fitting said formed blank on the mandrel of said press with the bottom of the former abutting against the leading end of the latter;

applying a lubricant to a portion of the surface of said blank;

pushing out said mandrel by the action of said press to draw said blank through the die of said press;

pulling in the drawn blank together with said mandrel out of said die by the action of said press; and

repeating the applying, pushing and pulling steps in the recited order until a drawn tubular product having desired shape and size is manufactured,

wherein the improvement comprises the step of turning said drawn blank a predetermined angle on the axis thereof with respect to said mandrel during each of said repeating steps, whereby said lubricant can be applied to another portion of the surface of said drawn blank at a second or subsequent applying step so that longitudinal and circumferential irregularities, if any, in the thickness of said tubular product can be eliminated by said turning step after the final repeating step.

9. A tubing manufacturing press of horizontal push bench type, comprising:

a hydraulic cylinder for pushing out and pulling in a ram;

a cross head secured to the leading end of said ram and adapted to be actuated by said hydraulic cylinder through said ram for moving back and forth;

a mandrel holder fitted in said cross head;

a mandrel end member fitted in said mandrel for turning on the axis thereof;

a mandrel removably connected to said mandrel end member;

a means of applying lubricant to said tubing; and

a die for receiving a blank together with said mandrel to draw said blank into desired shape and size when said blank is pushed out through said mandrel, sand mandrel end member, said mandrel holder, said cross head and said ram by the actuation of said hydraulic cylinder,

wherein the improvement comprises turning means for turning said mandrel a predetermined angle on the axis thereof through said mandrel end member relative to said mandrel holder and said cross head thereby to turn said drawn blank said predetermined angle.

4,565,665

FLOW THROUGH ION SELECTIVE ELECTRODE

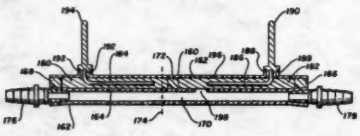
Eric J. Fogt, Maple Grove, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 3, 1983, Ser. No. 519,934

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] B29D *3/00*; G01N *27/46*

U.S. Cl. 264—267 4 Claims



1. A method for producing a flow-through ion sensing electrode, comprising the following ordered steps:

dissolving an ion selective material in a solvent which is a swelling agent for a plastic;

subsequently soaking in said solvent at least a portion of a plastic tube having a proximal end, a distal end, an outer wall, a first lumen, a second lumen, and an inner wall separating said first and second lumens, until said portion of said tube swells, said portion including at least part of said inner wall;

subsequently drying said tube to remove said solvent; and

subsequently filling only the first lumen of said tube with an electrolye;

said method further comprising the following non-ordered steps which may be performed in any convenient order relative to said ordered steps:

sealing said first lumen distal to at least a part of said portion of said tube and sealing said first lumen proximal to at least a part of said portion of said tube; and

inserting an electrode into the first lumen of said tube intermediate said first and second sealing means.

4,565,666

METHOD OF PRODUCING COMBINATION ION SELECTIVE SENSING ELECTRODE

Patrick T. Cahalan, Maple Grove, and Michelle A. Schwinghammer, Forest Lake, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

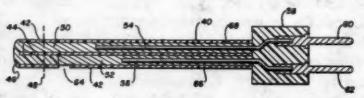
Division of Ser. No. 519,938, Aug. 3, 1983, Pat. No. 4,486,290.

This application Jul. 18, 1984, Ser. No. 632,519

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] B29C *39/04*

U.S. Cl. 264—267 1 Claim



1. A method for producing an ion sensing electrode, comprising the following ordered steps:

dissolving an ion selective material in a solvent which is a swelling agent for a plastic;

subsequently soaking in said solvent a tube fabricated of said plastic and having a proximal end, a distal end, and outer wall, a first lumen, a second lumen and an inner wall separating said first and second lumens, said tube soaked only distal to a first point intermediate the proximal and distal ends of said tube, until said tube swells;

subsequently drying said tube until said solvent evaporates; and

filling the first and second lumens of said tube with an electrolyte;

said method further comprising the following non-ordered steps which may be performed in any convenient order relative to said ordered steps:

removing that portion of the outer wall of said tube located exterior to said second lumen, intermediate the distal end of said tube and a second point proximal to said first point;

sealing the distal end of the first lumen of said tube; and

inserting first and second electrodes into the first and second lumens of said tube.

4,565,667

FAILED FUEL DETECTION APPARATUS

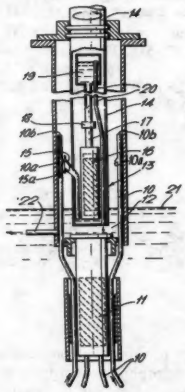
Edward Duncombe, Altrincham, and Gordon Thatcher, Lymm, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 13, 1982, Ser. No. 449,526

Claims priority, application United Kingdom, Jan. 8, 1982, 8200593

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—246 4 Claims



1. Failed fuel detection apparatus of the kind having liquid coolant sampling pipes which are selected in turn for testing for products, indicative of fuel failure, in the liquid coolant; said apparatus comprising a pump for impelling coolant in the pipes to outlet points in the pipes downstream of said pump, and a rotary collector having an open mouth constructed and arranged to scan said outlet points, and an unsealed gap between said points and said collector mouth for precluding contact thereof, across which gap coolant in the pipes can be impelled by said pump upstream of said points.

4,565,668

METHOD OF MAKING POWDER-METALLURGICAL ARTICLES

Christer Aslund, Bruksgränd 14, and Claes Tornberg, Staltappargatan 27, both of S-64400 Torshilla, Sweden

Filed Nov. 5, 1984, Ser. No. 668,296

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338369

Int. Cl.[4] B22F *1/00*

U.S. Cl. 419—68 8 Claims

1. A method of making powder-metallurgical articles, in which powder of metal and/or metal alloys fills a thin-walled closed casing and cold-isostatic pressure is applied to the casing whereby the powder within the casing is compacted so as to form a solid or dimensionally stable article said casing having an outer wall surface with an approximately straight join-

ing weld seam, comprising applying to the outside of said wall surface including said weld seam prior to the application of the cold-isostatic pressure a closely fitting and elastically expand-

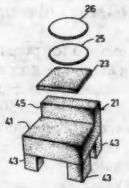
able layer of an elastically expandable material preferably in such a way that an approximately uniform prestress is applied to the wall surface.

4,565,669

MICROWAVE ASHING APPARATUS

Michael J. Collins, and Wyatt P. Hargett, Jr., both of Matthews, N.C., assignors to CEM Corporation, Matthews, N.C.

Filed Apr. 21, 1983, Ser. No. 487,307
Int. Cl.[4] G01N *31/12*; H05B *6/64*
U.S. Cl. 422—78 2 Claims



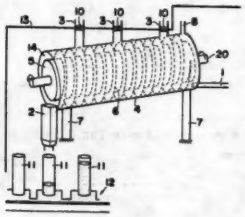
1. An apparatus for ash analysis of an ashable material selected from the group consisting of synthetic organic polymers, waste water sludges, activated sludges, industrial wastes, river bottom sediments, lake bottom sediments, stream bottom sediments, coals, foods, papers and structural materials, while removing gaseous products of combustion from the material during ashing without removing any ash, said apparatus comprising means defining a chamber, a source of microwave radiation for radiating onto contents of said chamber, a substantially flat, silicon carbide ashing means located within the chamber, which is stable and essentially non-oxidizable, capable of being heated by microwave radiation to a temperature in the range of 400° to 1,000° C. without deterioration, and which has horizontal flat top and bottom surfaces, first and second thin flat non-woven cloth pads of fused quartz fibers, both of which have flat upper and lower surfaces, the first of which pads is located on top of and in continuous intimate contact with the top surface of the silicon carbide ashing means, and the second of which pads is located atop the first pad, so that ashable material to be analyzed for ash content may be placed between such pads for such ashing to be effected, said second pad being permeable to passage of gas released during ashing of the ashable material and a refractory material in contact with the bottom surface of the ashing means so as to at least partially inhibit heat loss therefrom.

4,565,670

HEAT TREATING APPARATUS USING MICROWAVES

Hitoshi Miyazaki, Katsuta; Katsuyuki Ohtsuka, Mito, and Kazutoshi Miyata, Hitachiota, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 489,410
Claims priority, application Japan, May 6, 1982, 57-75755
Int. Cl.[4] G21F *9/08*
U.S. Cl. 422—186.04 9 Claims



1. A heat treating apparatus using microwaves for continuously treating a substance which contains nuclear materials, comprising:

a stationary outer cylinder having an inlet port at one end thereof, an outlet port at the other end thereof, and a gas discharge port;

an inner cylinder coaxially rotatably mounted within said outer cylinder;

said apparatus having an annular passage defined between said outer cylinder and said inner cylinder through which the materials to be treated are caused to pass for being heat treated;

waveguide means opening into said annular passage for guiding microwaves into said annular passage; and

a helical vane on said inner cylinder extending along substantially the entire length of the outer surface of said inner cylinder and projecting radially outwardly from the outer surface of said inner cylinder a distance such that the outer end thereof is movable in frictional contact with the inner surface of said outer cylinder when said inner cylinder is rotated for transferring the material to be treated along said annular passage from said inlet port to said outlet port, the distance between the spires of said vane parallel to the axis of said cylinders and the radial dimension of said annular passage defining a space between the spires of said vane having a size for limiting the amount of material to be treated to less than that necessary for maintaining criticality safety of the material being treated.

4,565,671

SINGLE CRYSTAL MANUFACTURING APPARATUS

Kinya Matsutani, Yokohama, and Toshikazu Yokota, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 1, 1984, Ser. No. 636,682
Claims priority, application Japan, Aug. 5, 1983, 58-143539; Aug. 5, 1983, 58-143540
Int. Cl.[4] C30B *15/14*
U.S. Cl. 422—249 11 Claims

1. A single crystal manufacturing apparatus comprising:

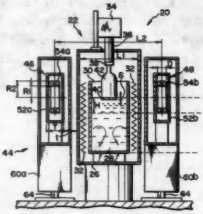
a crucible containing a melting liquid of a single crystal raw material;

heating means arranged outside the crucible for heating the melting liquid;

a pulling mechanism having a seed crystal movably supported substantially along a perpendicular direction to the surface of the melting liquid for growing a single crystal by inserting the seed crystal into the melting liquid and then pulling the seed crystal from the melting liquid; and

magnetic field generating means having a superconductive

magnet for applying to the melting liquid a magnetic field for suppressing a thermal convection in the vicinity of the



surface of the melting liquid and allowing the thermal convection in the region of the melting liquid below the surface thereof.

4,565,672

METHOD FOR THE MANUFACTURE OF PUO_2-CONTAINING CRYSTALS

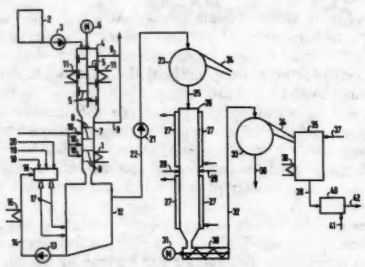
Volker Schneider, Heusenstamm; Wolfgang Stoll, Hanau, and Wolf-Günther Druckenbrodt, Rodenbach, all of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,638

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1982, 3245051

Int. Cl.[4] C01G *56/00*

U.S. Cl. 423—15 4 Claims



1. In a method for the manufacture of PuO_2-containing crystals by oxidizing plutonium in a nitric acid solution to form Pu^{6+}, precipitation of ammonium plutonyl carbonate containing crystals through reaction with ammonium and carbonate ions and subsequent separation and calcining of these crystals, the improvement comprising removing metal compound contaminents in the nitric acid solution which form difficult-to-dissolve metal hydroxide compounds by introducing the oxidized Pu^{6+} in solution in nitric acid into an aqueous solution of a salt selected from the group consisting of ammonium carbonate and ammonium acetate, dosing said aqueous solution with NH_3 and acid ions selected from the group consisting of carbonate (CO_3^{-2}) ions and acetate (CH_3COO^-) ions to produce a mol ratio of acid ions to the Pu^{6+} ions in said aqueous solution of at least 4:1, said acid ions forming complex compounds containing plutonium which remain dissolved in the aqueous solution, while the metal compound contaminants convert to difficult-to-dissolve metal hydroxide compounds and are precipitated, separating the precipitated metal hydroxide compounds from the aqueous solution, and thereafter adding NH_3 and carbonate ions to effect precipitation of the ammonium plutonyl carbonate containing crystals.

4,565,673

PROCESS FOR ELUTING INDIUM FROM A CHELATE RESIN CONTAINING ADSORBED INDIUM

Yushin Katsuoka; Masaaki Matsuda; Masahiro Aoi, and Kunitake Chino, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 27, 1984, Ser. No. 686,937

Claims priority, application Japan, Jan. 5, 1984, 59-391

Int. Cl.[4] C01G *15/00*

U.S. Cl. 423—112 13 Claims

1. A process for eluting indium from a chelate resin having a phosphorus atom-containing, chelate-forming group selected from the group consisting of a phosphine group, a phosphonium base, a phosphonic acid ester group, a phosphonic acid group, a phosphinic acid ester group, a phosphinic acid group, a aminoalkylenephosphonic acid ester group or an aminoalkylenephosphonic acid group, which contains adsorbed indium and at least one metal selected from the group consisting of iron, zinc, nickel, cobalt, copper, cadmium and lead, which comprises contacting said resin firstly with a primary eluent for the metals other than indium containing an acid containing no halogen atom in the molecule selected from the group consisting of sulfuric acid, nitric acid, phosphoric acid, acetic acid and a mixture thereof at a concentration of 0.1N or higher and then with an eluent for indium which is selected from the group consisting of (1) a solution of an acid containing a halogen atom in the molecule, (2) a mixed solution of (a) a metal halide, an ammonium halide or a mixture thereof and (b) an acid and (3) a mixed solution of a sulfide and a base compound.

4,565,674

ALUMINA CHLORINATION

Yalamanchili K. Rao, and Mohamad K. Soleiman, both of King County, Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Feb. 10, 1984, Ser. No. 579,026

Int. Cl.[4] C01F *7/60*

U.S. Cl. 423—137 19 Claims

1. A carbothermic method for preparing $AlCl_3$, comprising the steps of contacting aluminum containing ore with chlorine in the presence of a carbonaceous reducing agent at an elevated temperature of and between 750°–950° C., the reaction occurring in the presence of a catalytically active amount of a catalyst selected from the group consisting of:

alkaline earth carbonates;

fused mixtures of alkaline earth carbonates;

fused mixtures of alkali and alkaline earth carbonates;

alkaline earth oxides;

sources of alkaline earth oxides upon heat decomposition in situ at a temperature of about 750° C.;

and mixtures thereof.

4,565,675

PROCESS FOR TREATING AND RECOVERING PICKLING WASTE LIQUIDS FOR STAINLESS STEEL

Kazuhiro Uchino; Toshio Watanabe, both of Chiba; Yoshio Nakazato, Tokyo; Minoru Hoshino, and Noboru Ishihara, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe; Research Development Corporation and Solex Research Corporation of Japan, both of Tokyo, all of, Japan

Filed Mar. 20, 1985, Ser. No. 713,870

Claims priority, application Japan, Mar. 30, 1984, 59-62435

Int. Cl.[4] C01G *49/02, 53/04, 37/02*

U.S. Cl. 423—140 2 Claims

1. A process for treating and recovering nitric-hydrofluoric acid, nitric acid and hydrochloric acid waste liquids used for the pickling of stainless steel, which comprises removing Fe^{3+} from the nitric-hydrofluoric acid and nitric acid waste liquids by a solvent extraction process to recover it as an iron oxide or a metallic iron, recovering the nitric acid and the hydrofluoric acid by another solvent extraction process, converting the remaining ions of Cr and Ni into a hydroxide by adding an

alkali, and recovering them as ferromagnetic oxides by a ferrite formation process using the hydrochloric acid waste liquid as an acid for resolving the hydroxide and an ion source of Fe^{2+}.

4,565,676

METHOD FOR TREATING EXHAUST GASES

Mark A. Propster, Granville; Subhash Kithany, Columbus, and Stephen Seng, Frazeysburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 19, 1984, Ser. No. 672,755
Int. Cl.[4] B01D *47/00*; B01J *8/00*; F01N *3/10*
U.S. Cl. 423—210 14 Claims

1. A process for cleaning and incinerating exhaust gases from a curing oven including the steps of

forming and maintaining a vertical, packed bed of durable heat transfer media,

discharging exhaust gases from the curing oven into the lower central portion of the bed and moving the gases upwardly through the bed,

discharging hot gases into the intermediate central portion of the bed and moving the gases upwardly through the bed, the hot gases incinerating any particulate or condensate in the exhaust gases from the curing oven,

moving the media downwardly and in direct contact with and countercurrently to the flow of gases wherein the direct contact media with the gases and in the lower portion the hot media preheats incoming fume gases and in the upper portion the hot gases preheat the incoming cool media, and

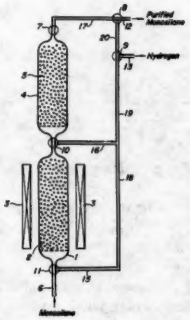
removing the gases that pass through the top portion of the packed bed.

4,565,677

METHOD FOR PURIFYING RAW MATERIAL GAS FOR USE IN SEMICONDUCTOR MANUFACTURING AND PURIFIER FOR USE IN SAID METHOD AND METHOD OF MANUFACTURING SAID PURIFIER

Atsushi Yusa, Kamiina, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jun. 20, 1984, Ser. No. 622,757
Claims priority, application Japan, Jul. 1, 1983, 58-120646
Int. Cl.[4] C01B *13/00*
U.S. Cl. 423—219 16 Claims



1. A method for purifying a raw material gas for use in manufacturing semi-conductor devices, comprising:

(a) preparing a purifier by:

(i) charging an oxygen absorption tank with a high surface area carrier;

(ii) heating the carrier to a temperature greater than a thermal decomposition temperature of at least one gaseous hydride of at least one element selected from the group consisting of silicon, germanium, phosphorus and arsenic;

(iii) flushing said heated carrier with said at least one hydride, thereby depositing on said carrier a hydrogenated amorphous layer of said at least one element;

(b) heating said purifier to a predetermined temperature; and

(c) bringin raw material gas into contact with the heated purifier to remove any oxygen contained in the raw material gas.

4,565,678

METHOD OF REDUCING SULFUR OXIDE AND NITROGEN OXIDE CONTENT OF FLUE GAS

Clyde W. Zielke, McMurray, and Muh-Cheng M. Wu, Bethel Park, both of Pa., assignors to Conoco Inc., Wilmington, Del.

Filed Dec. 10, 1984, Ser. No. 680,037
Int. Cl.[4] C01B *21/00, 17/00*
U.S. Cl. 423—235 4 Claims

1. The method for simultaneously removing both sulfur oxides and nitrogen oxides from a mixture of gases containing such oxides in a regenerable wet-scrubbing process, which method comprises:

(a) contacting said mixture of gases in a gas-liquid contacting zone with fresh aqueous scrubbing solution comprising ammonium hydroxide, ammonium thiosulfate, and a ferrous chelating agent salt, said solution being at a pH between about 5.8 and 6.0;

(b) removing from said contacting zone as a product of the process a gaseous stream containing a significantly reduced proportion of sulfur oxides and nitrogen oxides, and an increased proportion of molecular nitrogen;

(c) also removing from said contacting zone spent aqueous scrubbing solution containing an increased concentration of bisulfite and nitric oxide chelate complex;

(d) passing a first portion of said spent solution to regeneration described further hereinafter;

(e) admixing a second portion of said spent solution with regenerated solution from said regeneration;

(f) passing the admixed solution from step (e) to a residence-time reaction zone to produce fresh aqueous scrubbing solution;

(g) returning the fresh aqueous scrubbing solution from step (f) to said contacting zone of step (a);

(h) adding hydrogen sulfide to said first portion of spent solution at elevated temperature and pressure as an initial step of said regeneration to reduce sulfur-containing compounds therein to polysulfides and to produce water vapor and elemental sulfur;

(i) flashing the reduced spent solution from step (h) to a zone of lower pressure to produce an aqueous liquid phase containing increased concentrations of ammonium hydroxide and bisulfide, minor amounts of sulfate, and liquid elemental sulfur;

(j) removing elemental sulfur from said zone of lower pressure as a product of the process; and

(k) returning said aqueous liquid phase of step (i), as comprising said regenerated solution, to said admixing of step (e).

4,565,679

METHOD OF REGULATING THE AMOUNT OF REDUCING AGENT ADDED DURING CATALYTIC REDUCTION OF NO_x CONTAINED IN FLUE GASES

Stanislaw Michalak; Klaus-Dieter Weber, both of Reichshof, and Jürgen Meier, Wiehl, all of Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Oct. 17, 1984, Ser. No. 661,892
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 3337793
Int. Cl.[4] B01J *8/00*; C01B *21/00*; C01G *31/00*
U.S. Cl. 423—239 4 Claims

1. In a process of regulating the amount of reducing agent

added during the catalytic reduction of NO_x of flue gases originating from the combustion installation fired with fossil fuels with which an adjustment value to be used for regulation of a quantity of reducing agent to be added is determined selectively, in response to a prescribed reducing agent/NO_x stoichiometry factor, from the quantity of combustion air supplied to the combustion installation, as well as from the quantity of exiting flue gas, plus the NO_x concentration downstream ahead of the catalyzer; the improvement therewith which includes the steps of:

returning to the regulation process, as a primary correction value, the value of the NO_x concentration downstream after said catalyzer;

returning to the regulation process, as a secondary correction value, the reducing agent concentration downstream after said catalyzer; and

while maintaining the NO_x emission limit value, appropriately changing said stoichiometry factor in such a way as to regulate an excess of not-reacted reducing agent after said catalyzer over a prescribed fixed value of from 50 to 3 ppm volume.

4,565,680

RECOVERY OF PHOSPHORUS AND ALUMINUM FROM SPENT ACID FROM THE BRIGHT-DIP ALUMINUM FINISHING PROCESS

Lanny E. Todd; Philip E. Burke; Danny L. Smith, all of Nashville, Tenn., and Carla T. Gleason, Wendell, N.C., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 14, 1985, Ser. No. 691,326

Int. Cl.[4] C01B *25/28*

U.S. Cl. 423—310 **11 Claims**

1. A method for recovering phosphorus values from aqueous phosphoric acid solutions containing phosphoric acid in combination with appreciable amounts of dissolved aluminum phosphate and nitric acid which comprises the steps of concentrating and stripping with air the aqueous acid to remove therefrom nitric acid; filtering the concentrated aqueous acid solution to remove therefrom precipitated monoaluminum phosphate, then ammoniating the filtrate to produce a monoammonium phosphate solution, recovering the solids, then treating the solids with aqueous ammonia to produce diammonium phosphate.

4,565,681

SYNTHETIC ZEOLITE ZSM-5 HAVING A DIMETHYLETHYLPROPYLAMMONIUM COMPONENT

Günter H. Kühl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,570

Int. Cl.[4] C01B *33/28*; B11J *29/06*

U.S. Cl. 423—328 **9 Claims**

1. A method for synthesizing ZSM-5 crystalline silicate exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification

which method comprises preparing a mixture containing a source of silicon dioxide; dimethylethylpropylammonium cation as the only tetraalkylammonium component; a source of alkali metal oxide; optionally a source of alumina; and water, and having a composition in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3—20 to infinity

H_2O/OH^-—50 to 400

OH^-/SiO_2—0.05–0.4

$Q/(Q+M)$—0.05–0.95

wherein Q is dimethylethylpropylammonium cation and M is an alkali metal; and maintaining the mixture at a temperature of from about 120° C. to about 200° C. until crystals of the ZSM-5 crystalline silicate are formed.

4,565,682

PROCESS FOR PRODUCING PYROGENIC SILICIC ACID WITH INCREASED THICKENING EFFECT

Stephen Loskot, Kempten; Günter Kratel, Durach; Wilfried Lang, and Ernst Mühlhofer, both of Sulzberg, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 498,955, May 29, 1983, abandoned. This application Feb. 5, 1985, Ser. No. 698,737

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223454

Int. Cl.[4] C01B *33/12*

U.S. Cl. 423—336 **3 Claims**

1. A process for producing pyrogenic silicic acid having an increased thickening effect, comprising the steps of:

subjecting silicon-containing materials selected from the group consisting of silicon tetrachloride, silicon tetrafluoride, tetramethylsilane, trimethylchlorosilane, dimethyldichlorosilane, and methyltrichlorosilane to a pyrolysis flame, while introducing additional energy in amounts of 20 to 150%, calculated on the energy content of the pyrolysis flame, into the pyrolysis flame in an area between one-fourth and three-fourths of the longitudinal extension of the pyrolysis flame.

4,565,683

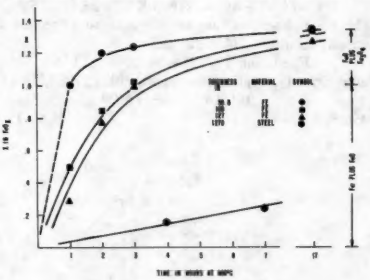
PRODUCTION OF CARBON FILAMENTS

David J. C. Yates, W. Millington, and Rees T. Baker, Annandale, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 440,451, Nov. 10, 1982, abandoned, which is a continuation-in-part of Ser. No. 222,613, Jan. 5, 1981, abandoned. This application Jul. 6, 1984, Ser. No. 628,520

Int. Cl.[4] C01B *31/02*; D01F *9/12*

U.S. Cl. 423—447.3 **4 Claims**



1. A method for producing carbon filaments, which method comprises:

(a) heating a metallic iron composition, comprised of at least about 95 wt. % iron, to a temperature of at least about 540° C., which iron composition is in a form selected from tube, sheet, rod, foil, and gauze;

(b) contacting the heated iron composition with steam for an amount of time which will convert all, or a portion of, the iron composition to FeO, but no greater than the time at which FeO begins to convert to Fe_3O_4; and

(c) contacting the resulting iron monoxide with one or more carbon-containing gases at a temperature from the dissociation temperature of the gas to about 800° C., wherein the iron composition is substantially free of: (aa) elements which form protective oxides at the temperature employed in step (a) above; and (bb) metal components which are volatile at the temperature employed in step (a) above.

4,565,684

REGULATION OF PYROLYSIS METHANE CONCENTRATION IN THE MANUFACTURE OF GRAPHITE FIBERS

Gary G. Tibbetts, Birmingham, and Michael G. Devour, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 642,574, Aug. 20, 1984, abandoned. This application Dec. 21, 1984, Ser. No. 685,046
Int. Cl.[4] C01B *31/04;* D01F *9/12*
U.S. Cl. 423—447.3 6 Claims

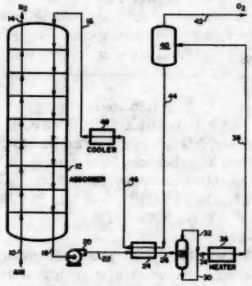
1. A methane pyrolysis process for growing graphite fibers on a suitably nucleated ceramic surface, said process comprising flowing a hydrogenbase gas comprising about 5 to 15 volume percent methane over said surface while heating to decompose the methane to form microscopic carbon filaments that project from the surface, and thereafter flowing a gas containing greater than 25 volume percent methane over said surface while heating to decompose the methane to thicken the filaments into fibers.

4,565,685

AIR SEPARATION WITH TEMPERATURE AND PRESSURE SWING

Anthony A. Cassano, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 14, 1984, Ser. No. 651,181
Int. Cl.[4] C01B *13/00*
U.S. Cl. 423—579 11 Claims



1. A continuous process for separating air into oxygen and nitrogen comprising the repeated steps of contacting feed air with an oxygen acceptor mixture of alkali metal nitrite and nitrate salts in an absorption zone at relatively low temperature and pressure to absorb oxygen from the feed air and oxidize the acceptor, removing an oxygen-depleted nitrogen-rich stream from the absorption zone, pumping the oxidized acceptor to an elevated pressure, separately releasing the absorbed oxygen from the acceptor at elevated temperature and the elevated pressure in a desorption zone so as to regenerate the oxygen acceptor and generate high pressure product oxygen and recycling the oxygen acceptor to the absorption zone after reducing its temperature and pressure to absorpation zone conditions.

4,565,686

METHOD OF STORING HYDROGEN USING NONEQUILIBRIUM MATERIALS AND SYSTEM

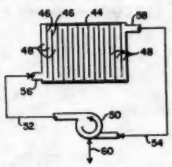
Kaplesh Kumar, Wellesley, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation of Ser. No. 226,927, Jan. 21, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 502,535
Int. Cl.[4] C01B *6/24*
U.S. Cl. 423—644 8 Claims

6. A process for reversibly storing hydrogen in an amorphous rare earth-transition metal alloy material comprising the steps of:

supplying hydrogen to amorphous rare earth-transition metal alloy material in a closed system, cycling said hydrogen over said alloy material to cause hydrogen to be stored in said alloy material; and

withdrawing hydrogen from said system to retrieve the stored hydrogen.

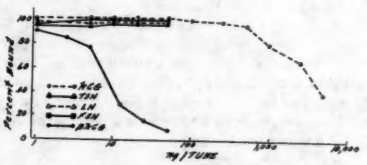


4,565,687

MONOCLONAL ANTIBODIES SPECIFIC FOR THE UNBOUND β SUBUNIT OF HUMAN CHORIONIC GONADOTROPIN

Mohammad B. Khazaeli; William H. Beierwaltes, and Barry G. England, all of Ann Arbor, Mich., assignors to The Reagents of the University of Michigan, Ann Arbor, Mich.

Filed Nov. 16, 1981, Ser. No. 321,578
Int. Cl.[4] C12N *15/00;* G01N *33/54;* A61K *43/00*
U.S. Cl. 424—1.1 11 Claims



5. A murine hybridoma produced by the fusion of a murine lymphocyte and a murine myeloma cell line that produces and secretes monoclonal antibodies of the IgG class that specifically bind to the unbound β subunit of human chorionic gonadotropin having substantially no cross reactivity with intact human luteinizing hormone, human thyroid stimulating hormone and human follicle stimulating hormone and less than 0.25% cross reactivity with intact human chorionic gonadotropin and having substantially no inhibition in said binding in the presence of unbound β subunits of human follicle stimulating hormone, human thyroid stimulating hormone and human follicle stimulating hormone at up to 250 ng/tube.

10. The hybridoma cell line having the essential characteristics of hybridoma cell line KEB-1E5.1, deposited as ATCC HB8095, said characteristics consisting essentially of the production of murine monoclonal antibodies which specifically bind to the unbound β-human chorionic gonadotropin subunit in the presence of intact human chorionic gonadotropin and in the presence of the β subunit of human follicle stimulating hormone, human thyroid stimulating hormone and human luteinizing hormone.

4,565,688

QUATERNIZED PHTHALOCYANIN DERIVATIVES

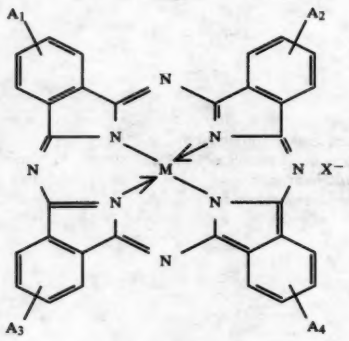
Michael J. Malin, Park Ridge, N.J.; Bernard Loev, Scarsdale, and Deng R. Hwang, Tarrytown, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,242

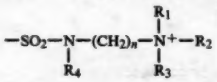
Int. Cl.[4] C09B 47/04, 47/30, 47/32

U.S. Cl. 424—3 9 Claims

1. A compound having the formula



wherein each of A_1–A_4, same or different, is hydrogen, sulfonate, hydroxyl or a C_1–C_7 hydrocarbon, optionally containing at least one heteroatom, selected from alkoxy, cyano, carbalkoxy, a linear or branched, saturated or unsaturated aliphatic or cycloaliphatic hydrocarbon, an unsubstituted or substituted aryl or heteroaryl group, a benzyl radical or a benzyl substituted by oxygen or a nonalkylatable nitrogen or sulfur atom with the proviso that at least one of A_1–A_4 is



in which each of R_1–R_3, same or different, is lower alkyl, cycloalkyl or alkenyl, wherein at least one is C_2–C_4 and two of R_1–R_3 may join to form a ring; R_4 is hydrogen or a C_1–C_3 alkyl; n is an integer from 2 to 6; M is a polyvalent metal ion; and X^- is a water-soluble anion.

4,565,689

METHOD FOR TREATING THE EFFECTS OF ALCOHOL

Emanuel Revici, New York, N.Y., assignor to Wirth Maschinen- und Bohrgerate-Fabrik GmbH, New York, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,870

Int. Cl.[4] A61K 31/21, 31/095, 31/105, 31/265, 31/045, 33/04

U.S. Cl. 424—10 13 Claims

1. A method for treating or aiding in the treating of the manifestations of alcoholism or alcohol intoxication by adding in the control of the craving for alcohol or by aiding in the control of alcohol withdrawal symptoms, or by aiding in the control of alcoholic intoxication in a human having said manifestations, craving, symptoms or intoxication which comprises internally administering to said human an effective amount of compound having an active ingredient of an organic compound containing at least one bivalent negative sulfur or its pharmaceutically acceptable salts to control said craving, symptoms, manifestations or intoxification so as to counteract the effects of alcohol.

4,565,690

METHOD FOR TREATING DRUG ADDICTION

Emanuel Revici, New York, N.Y., assignor to Elena Avram, New York, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,493

Int. Cl.[4] A61K 31/21, 31/095, 31/105, 31/265, 31/045, 33/04

U.S. Cl. 424—10 16 Claims

1. A method for treating drug addiction in a human body from compounds which have caused the body to produce abnormal fatty acids having a catabolic character which comprises administering to said body a sufficient amount of an antifatty acid agent comprising a lipidic or liposoluble organic compound containing bivalent negative selenium or sulfur to counteract the effects of said abnormal fatty acids.

4,565,691

ORAL HYGIENE COMPOSITIONS

Robert J. Jackson, Leatherhead, England, assignor to Beecham Group p.l.c., England

Filed Apr. 18, 1983, Ser. No. 485,609

Claims priority, application United Kingdom, Apr. 20, 1982, 8211343

Int. Cl.[4] A61K 7/16, 7/18

U.S. Cl. 424—52 8 Claims

1. An oral hygiene composition, comprising from 0.01 to 2.0% by weight of the composition of a water soluble fluoride source consisting of an ionic fluoride or an ionic fluoride admixed with an ionic monofluorophosphate, from 10 to 99% by weight of the composition of a water insoluble ionic abrasive material containing metal cations capable of forming a water insoluble fluoride, and between 0.01% and 9% by weight of the composition of a water soluble ionic agent containing the anionic counter ions of the ionic abrasive together with metal cations capable of forming a water soluble fluoride.

4,565,692

EXTRUDABLE DENTIFRICE

Patricia S. Mulvey, Manalapan; Jordan B. Barth, East Brunswick, and Linda J. Vellekoop, Neshanic, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,968

Int. Cl.[4] A61K 7/16

U.S. Cl. 424—57 8 Claims

1. A dentifrice suitable for use in a mechanically operated or pressure differential dispenser comprising about 20–80% by weight of an aqueous humectant vehicle, about 0.1–5% by weight of gelling agent and about 10–75% by weight of polishing agent, which dentifrice contains as polishing agent at least about 20% by weight of dicalcium phosphate based upon the weight of the dentifrice or at least about 10% by weight of a siliceous polishing agent, wherein said gelling agent is i-carrageenan in amount of about 0.1–2.0% by weight of the dentifrice or a mixture of in amount of about 0.1–2.5% by weight of the dentifrice of i-carrageenan mixed with a cellulosic gelling agent in a weight ratio of i-carrageenan to cellulosic gelling agent of about 99:1 to about 1:3 and the total gelling agent is present in amount of up to about 5% by weight.

4,565,693

DEODORANT COMPOSITION

Frank W. Marschner, Whitehouse Station, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,527

Int. Cl.[4] A61K 7/36, 9/12

U.S. Cl. 424—67 10 Claims

1. A method of deodorizing odorous body locations comprising contacting said locations with a deodorant composition comprising an effective deodorizing amount of a particulate zinc glycinate compound having a pH of about 7.9–8.7, which deodorizes within the pH range of about 8 and 7 by means of chemically neutralizing body odors by chemical interaction with the odoriferous compounds in sweat, and inhibits bacte-

rial growth on the skin; dissolved and/or suspended in a cosmetically acceptable vehicle free of inorganic and organic acids and water soluble metal salts of fatty acids.

4,565,694

CONTRACEPTIVE VAGINAL TABLETS

András Kovács, Bajcsy Zs. ut 19/a, 1065 Budapest; Rudolf Szebeni, Béke u. 48, 2131 Göd, and Béla Köszegi, Corvin körut 52, 1192 Budapest, all of Hungary

PCT No. PCT/HU83/00052, § 371 Date Jun. 7, 1984, § 102(e) Date Jun. 7, 1984, PCT Pub. No. WO84/01502, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 7, 1983, Ser. No. 621,905

Claims priority, application Hungary, Oct. 7, 1982, 3211/82

Int. Cl.[4] A61K *31/79*

U.S. Cl. 424—80 **2 Claims**

1. A contraceptive vaginal tablet comprising 0.2 to 3 parts by weight of boric acid, 10 to 20 parts by weight of tartaric acid, 1 to 2 parts by weight of vitamin K_3-sodium bisulfite adduct, 0.8 to 1.2 parts by weight of polyvinyl pyrrolidone, 2 to 5 parts by weight of magnesium stearate, 8 to 12 parts by weight of carboxymethyl cellulose, 8 to 12 parts by weight of lactose and 50 to 65 parts by weight of microcrystalline cellulose.

4,565,695

SYNTHETIC PHEROMONE 10-METHYL-2-TRIDECANONE AND ITS USE IN CONTROLLING THE SOUTHERN CORN ROOTWORM AND RELATED DIABROTICITES

Paul L. Guss, Brookings, S. Dak.; James H. Tumlinson, III, Gainesville, Fla.; Philip E. Sonnet, Gainesville, Fla., and John R. McLaughlin, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 461,299, Jan. 27, 1983, Pat. No. 4,474,991. This application Jun. 27, 1984, Ser. No. 625,265

Int. Cl.[4] A01N *25/00, 35/00*

U.S. Cl. 424—84 **4 Claims**

1. A method of attracting a male *Diabrotica undecimpunctata* adult to a locus for the monitoring or control of reproduction in adult populations, comprising applying to said locus an effective amount of 10-methyl-2-tridecanone in combination with a suitable carrier.

4,565,696

PRODUCTION OF IMMUNOGENS BY ANTIGEN CONJUGATION TO LIPOSOMES

Timothy D. Heath, San Francisco, Calif.; Pang Shek, Willowdale, Canada, and Demetrios Papahadjopoulos, San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 3, 1983, Ser. No. 520,090

Int. Cl.[4] A61K *39/00, 31/00, 9/22, 9/52, 31/682, 47/00;* **C07G** *7/00;* **G01N** *33/54*

U.S. Cl. 424—88 **3 Claims**

1. In a method for eliciting an immune response for the production of antibodies to a predetermined antigen, wherein an immunogen containing said predetermined antigen is administered to a vertebrate host resulting in the production of antibodies, the improvement which comprises employing as the immunogen, antigen covalently bound to the membrane of a liposome, said antigen being present in at least about 25 grams of antigen per mole of lipid, where said liposome internally contains an antibody enhancing effective amount of a cell growth inhibitor.

4,565,697

PROCESS FOR PRODUCING A HEPATITIS B INFECTION PREVENTING VACCINE

Takao Ohmura, Osaka; Terufumi Fujiwara; Akimasa Ohmizu, both of Hyogo, all of Japan, and Satoshi Funakoshi, Los Angeles, Calif., assignors to Green Cross Corporation, Osaka, Japan

Filed Nov. 15, 1983, Ser. No. 552,079

Claims priority, application Japan, Nov. 29, 1982, 57-210240

Int. Cl.[4] A61K *39/12, 35/14;* **C12N** *7/04, 7/02*

U.S. Cl. 424—89 **2 Claims**

1. A process for producing a hepatitis B infection preventing vaccine containing, as main component thereof, hepatitis B surface antigen (HBsAg) and free of hepatitis B infectivity and of human plasma components which comprises the steps of:

(a) subjecting an aqueous solution of a human plasma protein fraction containing hepatitis B surface antigen to heat treatment at 50°–70° C. for 8–12 hours,

(b) removing from the so-treated aqueous solution those proteins precipitate by 10–20% saturation with ammonium sulfate by such ammonium sulfate saturation,

(c) collecting those proteins precipitable by 40–50% saturation with ammonium sulfate by such ammonium sulfate saturation,

(d) bringing an aqueous solution of the proteins precipitated in (c) into contact with a colloidal silicate and thereby causing HBsAg to be adsorbed on said colloidal silicate,

(e) eluting that portion of HBsAg adsorbed with a buffer (ph 8.5 to 9.5) containing 0.1–1% of a deoxycholic acid salt,

(f) adjusting the elute thus-obtained substantially to neutrality,

(g) adding polyethylene glycol to a level of 3–7% (w/v) and thereby removing hepatitis B virus (HBV) and immune complexes as a precipitate from supernatant,

(h) increasing the polyethylene glycol concentration in the supernatant to 15–20% (w/v), thus collecting HBsAg as a precipitate,

(i) subjecting the precipitate from (h) to gel filtration using a gel filtrating carrier equilibrated with a buffer having a pH of 6–8 and applicable to substances having a molecular weight of several hundred thousand to several million and thereby removing an HBsAg fraction,

(j) recovering a specific HBsAg fraction having a particle size of 18–24 nm and a density of 1.18–1.22 g/cm^3 by ultracentrifugation,

(k) inactivating the fraction from (j) at a formalin concentration of 1/1,500–1/2,500 at 35°–40° C. for 94–98 hours,

(l) allowing the resulting product to stand at 2°–6° C. for 6–10 days,

(m) dialyzing the inactivated HBsAg fraction from (l) against a buffer with pH 6–8,

(n) adding a vehicle and lyophilizing the resulting mixture.

4,565,698

MICROBIAL HAIR TONIC COMPOSITION

Hajime Yoshizumi, Takatsuki; Teruo Amachi, Takarazuka; Takaaki Kusumi, Suita; Takaharu Tanaka, Osaka, and Hiroshi Ishigooka, Ibaraki, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Jun. 17, 1983, Ser. No. 505,273

Claims priority, application Japan, Jun. 25, 1982, 57-110395

Int. Cl.[4] A61K *37/00, 35/78*

U.S. Cl. 424—93 **8 Claims**

1. A microbial hair treatment composition comprising 10^6 to 10^8 cells/ml of cultured living *Staphylococcus capitis* and a suitable solvent.

4,565,699

COMPOSITION OF MATTER AND PROCESS

Lester A. Dolak, Plainwell; Alice L. Laborde, Kalamazoo; Oldrich K. Sebek, Kalamazoo; Thomas M. Castle, Kalamazoo, and Thomas F. Brodasky, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 18, 1983, Ser. No. 515,077
Int. Cl.[4] A61K *35/74;* C12D *1/06;* C07D *333/32*
U.S. Cl. 424—117 5 Claims

1. Antibiotic U-68,204, which is active against Gram-positive bacteria, and which in its essentially pure form has the following characteristics:

(a) molecular weight of 267;

(b) color of crystals: white;

(c) is soluble in most organic solvents, but not in water;

(d) a characteristic infrared absorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1;

(e) a characteristic UV spectrum as shown in FIG. 2;

(f) a characteristic ^{1}H NMR spectrum as shown in FIG. 3;

(g) a characteristic ^{13}C-NMR spectrum as shown in FIG. 4;

(h) a molecular formula $C_{1317}NO_3S$; and,

(i) a melting point of 98°–101°.

4,565,700

PROCESS FOR PREPARATION OF SUBSTANCE HAVING HYPOTENSIVE COMPONENT

Tetsuya Suzuki, 3-1, Teraodai 2-chome, Ayase-shi, Kanagawa 252, Japan

Filed Dec. 12, 1983, Ser. No. 560,158
Claims priority, application Japan, Apr. 16, 1982, 57-62483; PCT Int'l Appl., Apr. 14, 1983, PCT/JP83/00116
Int. Cl.[4] A61K *35/78*
U.S. Cl. 424—195.1 17 Claims

1. A process for the preparation of a substance having a hypotensive component, which comprises (i) mixing an oil component squeezed or extracted from a soybean, with an aqueous extraction medium composed of (A) water, (B) an aqueous solution containing a salt selected from the group consisting of ammonium sulfate and sodium chloride in the concentration of 0.1 to 3%, (C) an aqueous solution containing an acid selected from the group consisting of lactic acid, acetic acid, succinic acid, oxalic acid, malic acid and citric acid in the concentration of up to 10% or (D) a combined aqueous solution of (B) and (C), said extraction medium being used in an amount of at least 5% based on the oil component, at such a temperature that the temperature of the mixture is lower than 90° C. at the initial stage but is lowered below 50° C. at the final stage, thereby to extract said substance in the aqueous extraction medium, (ii) subjecting the mixture to centrifugal separation to separate the aqueous extract from the oil phase, and (iii) recovering the substance in the solid state from the aqueous extract, said steps (i) and (ii) being carried out under temperature-time conditions included within the operation region A shown in FIG. 4.

4,565,701

PROTEIN SUPPLEMENT TABLET USED IN DIET PROGRAMS

Roger Ferguson, Rexburg, Id., assignor to Diet Center, Inc., Rexburg, Id.

Filed Dec. 28, 1981, Ser. No. 334,723
Int. Cl.[4] A23L *1/302*
U.S. Cl. 426—72 2 Claims

1. A method of preparing a diet supplement comprising:

mixing first ingredients comprising a blend of flavors with dicalcium phosphate,

blending said first ingredients,

mixing second ingredients comprising approximately 1.125 kilograms of d-calcium pantothenate, approximately 1.200 kilograms of thiamine mononitrate, approximately 1.650 kilograms of riboflavin, approximately 0.750 kilograms of pyridoxine and approximately 0.103 kilograms of cobalamin,

blending said second ingredients until they pass through a 12 to 14 mesh screen,

mixing third ingredients comprising approximately 131.800 kilograms of an invert sugar, approximately 110.140 kilograms of a protein isolate, approximately 4.500 kilograms of yeast and approximately 12.000 kilograms of hydroxypropyl cellulose,

blending said third ingredients until they pass through a 12 to 14 mesh screen, and

blending said first, second and third ingredients,

mixing approximately 1.350 kilograms of magnesium stearate with the mixture of said first, second and third ingredients until said latter mixture passes through a 12 to 14 mesh screen, and

forming said last mixture into tablet or wafer form.

4,565,702

DIETARY FIBER FOOD PRODUCTS AND METHOD OF MANUFACTURE

Robin C. Morley, Hackettstown, and Shri C. Sharma, Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 4, 1984, Ser. No. 616,990
Int. Cl.[4] A23L *1/29*
U.S. Cl. 426—93 20 Claims

1. A dietary fiber product comprising

(a) at least one sweetener present in amounts of about 40% to about 60%;

(b) at least one flavor source;

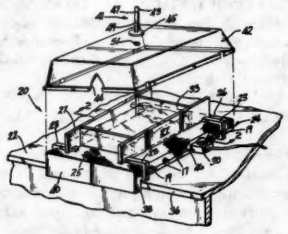
(c) a dietary fiber composition present in amounts of about 10% to about 40% by weight of the total dietary fiber product; said dietary fiber composition comprising an insoluble dietary fiber coated with or enrobed with a soluble dietary fiber, the insoluble dietary fiber being concentrated by means of purification and free of digestible components, said soluble dietary fiber being selected from the group consisting of alginates, gums, pectins, mucillages, plant exudates and mixtures thereof present in an amount sufficient to mask the mouthfeel or taste of the insoluble dietary fiber and said insoluble dietary fiber being derived from a cereal bran.

4,565,703

METHOD FOR PREPARING BREAD DOUGH

Henry J. Garbar, and Joan H. Garbar, both of 95 Winding Rd., Madison, Conn. 06443

Continuation-in-part of Ser. No. 343,493, Jan. 28, 1982, abandoned. This application Feb. 13, 1984, Ser. No. 579,408
Int. Cl.[4] G01N *7/22;* A21D *6/00;* F27D *11/00*
U.S. Cl. 426—232 3 Claims



1. In a method for rising bread dough in an apparatus having an electrically heated support member with a generally planar top surface and having first and second height indicator means disposed above said planar top surface, the improvement comprising:

(a) flattening a mass of kneaded dough on said support member top surface to impart to said dough mass a generally planar upper surface, said upper surface being substantially parallel to said support member top surface and said upper surface being a first predetermined distance above said support member top surface as measured by said first height indicator means;

(b) confining substantially the entire periphery of the flattened dough mass while the latter is on said support member top surface to restrict the periphery of the dough mass to planes substantially perpendicular to said support member top surface;

(c) covering said flattened confined dough mass to provide a heat and moisture retaining environment in which said dough mass will rise solely in a direction perpendicular to said support member top surface until the dough mass upper surface reaches a second predetermined distance above said support member top surface as measured by said second height indicator means; and

(d) removing the risen dough mass from the support member.

4,565,704

METHOD AND APPARATUS FOR FRYING

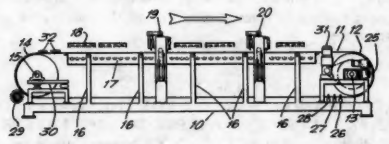
Magnus Dagerskog, Aengelholm; Anders B. Ganrot, and Kurt O. G. Jonsson, both of Bjuv, all of Sweden, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 30, 1983, Ser. No. 509,416

Claims priority, application European Pat. Off., Oct. 4, 1982, 82109147.7

Int. Cl.⁴ A23L *3/18*; A47J *37/08*

U.S. Cl. 426—233 **9 Claims**



1. A method of contact frying a foodstuff which comprises transporting the foodstuff on the upper run of a single solid endless thin steel conveyor belt which is heated from below by short wave infrared radiation, sensing the temperature of said belt and controlling said radiation in response to changes in said temperature.

4,565,705

PRODUCTION OF JERUSALEM ARTICHOKE FLOUR

H. Keith Snider, Hamilton, Mo., assignor to Show-Me Low Calorie Foods, Inc., Hamilton, Mo.

Filed Mar. 12, 1985, Ser. No. 711,009

Int. Cl.⁴ A23L *1/214*

U.S. Cl. 426—270 **12 Claims**

1. The process for the production of a flour from Jerusalem artichoke tubers which comprises:

reducing said tubers to particles having an average surface to volume ratio of not less than about 25 cm^2 to 1 cm^3 and exposing said particles to a solution comprised of water acidfied to a pH not greater than about 4 for a period of time sufficient to inhibit color formation;

pressing said particles at a final pressure of not less than about 6 atmospheres, gauge by subjecting the particles to a series of pressings at increasing pressures to remove juice from the particles, while releasing the pressure and loosening the compressed particles between each pressing;

washing the particles at least once with water prior to the final pressing and after exposure to the acidified water;

drying the particles at a temperature not greater than about 200° F. to a moisture content not greater than about 13%; and grinding the dried particles to a flour.

4,565,706

FREEZE DRYING A FROZEN FOAM OF COFFEE CONCENTRATE

John H. Wertheim, and Abraham R. Mishkin, both of Marysville, Ohio, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 177,481, Aug. 12, 1980, abandoned, and Ser. No. 537,679, Mar. 28, 1966, said Ser. No. 177,481, is a continuation of Ser. No. 537,679,. This application Dec. 7, 1981, Ser. No. 328,242

Claims priority, application Switzerland, Apr. 2, 1965, 4606/65

Int. Cl.⁴ A23F *5/32*

U.S. Cl. 426—385 **11 Claims**

1. Process for preparing freeze dried soluble coffee, which comprises adding inert gas to a concentrated aqueous extract of roast coffee having a solids content of about 25% to 60% by weight to provide a foam, freezing the foam to a solid mass, grinding the frozen foam to particles having a size of about 0.25 to 2.0 mm and freeze drying said particles to form freeze dried particulate soluble coffee, the amount of inert gas added to the aqueous extract being such as to provide said freeze dried soluble coffee with a density between about 0.2 and 0.3 gm/cc.

4,565,707

FLAVORING WITH DIALKYLTHIOALKENES, DIALKYLTHIOALKYLCYCLOALKENES AND MONOALKYLTHIOALKENYLCYCLOALKENES

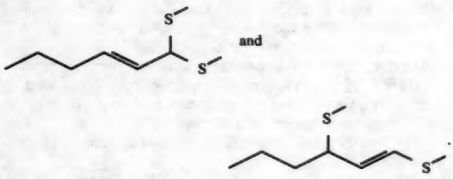
Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven; Kevin P. Miller, Middletown; Domenick Luccarelli, Jr., Neptune, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 8, 1985, Ser. No. 731,919

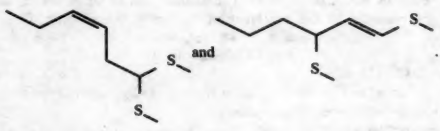
Int. Cl.⁴ A23L *1/226, 1/231, 1/235*

U.S. Cl. 426—535 **2 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the steps of intimately admixing with said foodstuff from about 0.001 ppm up to about 250 ppm of approximately 2:8 mixture of dithio derivatives having the structures:



2. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the steps of intimately admixing with said foodstuff from about 0.001 ppm up to about 250 ppm of approximately 65:35 mixture of dithio derivation having the structures:



4,565,708
PUDDING MIX

Jon R. Blake, Brooklyn Center; Richard K. Knutson, Corcoran, and Glenn J. VanHulle, Brooklyn Park, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Division of Ser. No. 433,074, Oct. 6, 1982, Pat. No. 4,513,016. This application Sep. 12, 1984, Ser. No. 649,583
Int. Cl.[4] A23L *1/187*
U.S. Cl. 426—579 **1 Claim**

1. A method for making a pudding component useful for addition to a dry layer cake mix in granulated form, comprising the steps of:

A. providing granules of cold water setting pudding dry mixes, said pudding granules having
  a. a particle size of from about 0.9 to 3.35 mm.;
  b. a bulk porosity of from about 0.50 to 0.60;
  c. a density of from about 0.5 to 0.70 g./cc.;
  d. an initial rate of moisture absorption of from about 0.060 to 0.080 of water per gram of granules per second;
  e. a moisture content of less than about 5% based on said granules, and

B. providing a heated sugar solution, said solution having a sugar solids concentration ranging from about 70% to 95% and a temperature sufficient to fluidize said solution;

C. mixing the pudding granules and the sugar solution to form a matrix of sugar and pudding granules;

D. forming the matrix into pieces ranging up to about one inch in longest dimension; and

E. allowing the pieces to cool to room temperature to harden, forming pudding mix matrix pieces.

4,565,709
PROCESS FOR THE PRODUCTION OF FODDER AND FAT FROM ANIMAL RAW MATERIALS

Odd Berge, Os, and Helge Hovland, Hop, both of Norway, assignors to Stord Bartz A/S

Continuation of Ser. No. 342,886, Jan. 26, 1982, abandoned. This application Feb. 6, 1984, Ser. No. 577,010
Claims priority, application Norway, Oct. 16, 1981, 813485
Int. Cl.[4] A23K *1/10*
U.S. Cl. 426—641 **27 Claims**

1. In a process for the production of fodder and fat from animal raw material, such as slaughterhouse waste, which comprises the steps of:

(a) heating said raw material to a temperature of from about 60° to about 135° C. and separating the heated product into a solid material phase and a fluid phase,

(b) separately drying said solid material phase and thereafter separating the dried product into solid fodder and fat,

(c) separately evaporating said fluid phase, and

(d) extracting fat by a procedure selected from
  (i) feeding the evaporated product of step (c) at least in part to said solid material phase of step (a) prior to carrying out step (b), and
  (ii) directly working up the evaporated product of step (c) into fat,

the improvement which consists in utilising heat energy derived from gases emitted on drying said solid material phase when separately evaporating said fluid phase in step (c).

4,565,710
PROCESS FOR PRODUCING CARBIDE COATINGS

Irwin L. Singer, Alexandria, and Russell A. Jeffries, Arlington, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1984, Ser. No. 617,777
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—35 **20 Claims**

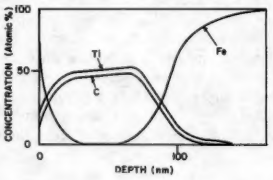
1. A method of treating the surface of a substrate comprising an alloy, comprising the steps of:

selecting a solid substrate, said substrate comprising an alloy having at least one minority solute;

selecting one of said minority solutes;

bombarding the surface of said substrate with an ion beam of a monatomic ion species, while said substrate is heated, at such an ion beam energy and substrate temperature that said selected minority solute migrates to the surface of said substrate and said monatomic ion species and minority solute react to form a surface alloy comprising the neutral atom of said ion species and said minority solute at the surface of said solid substrate.

19. A method of treating the surface of a substrate comprising an alloy, comprising the steps of:



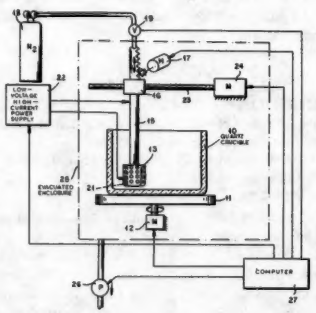
selecting a solid silicon substrate, said substrate having at least one minority solute;

bombarding the surface of said substrate with an ion beam of titanium or yttrium ions, while said substrate is heated, at such an ion beam energy and substrate temperature that at least one minority solute migrates to the surface of said substrate and said titanium or yttrium ions and at least one of said minority solutes which have migrated to the surface of said substrate react to form a surface alloy essentially consisting of the neutral atom of said ion species and at least one of said minority solute or solutes which have migrated to the surface of said solid substrate.

4,565,711
METHOD OF AND APPARATUS FOR THE COATING OF QUARTZ CRUCIBLES WITH PROTECTIVE LAYERS

Eduard Pinkhasov, Forest Hills, N.Y., assignor to Wedtech Corp., Bronx, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,055
Int. Cl.[4] B05D *1/40;* **C23C** *13/04*
U.S. Cl. 427—50 **18 Claims**



1. A method of generating a vapor at least one component of which is derived from a granular material which comprises the steps of:

disposing a mass of granules of said material between a pair of electrodes, said electrodes being unconnected to each other except through a power supply and by said mass; and

applying an electric current between said electrodes and through said mass of granules of an intensity sufficent to

induce local vaporization of said material at contact points between granules thereof by the current passing therethrough without bodily melting said granules.

14. An apparatus for coating a crucible comprising:

a vessel provided with at least one opening and containing a mass of granules of low thermal and electrical conductivity of a material including an element adapted to form a coating from a vapor phase;

a pair of electrodes in contact with said mass and disposed across at least a portion thereof;

means for supplying an electric current through said portion of a magnitude sufficient to induce localized vaporization of granules at mutual contact points of said granules in said portion without substantial melting of said granules whereby vapors pass through said opening for coating a substrate juxtaposed therewith;

means for supporting said vessel in juxtaposition with said substrate; and

means for passing a gas through said mass, the means for passing said gas through said mass being one of said electrodes and said gas adapted to react with said element in said mass.

4,565,712

METHOD OF MAKING A SEMICONDUCTOR READ ONLY MEMORY

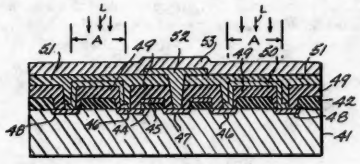
Hideo Noguchi, Yokohama; Tugunari Iwamoto, Tokyo, and Sakae Takei, Ebina, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 245,544, Mar. 19, 1981, Pat. No. 4,476,478. This application May 23, 1984, Ser. No. 613,408

Claims priority, application Japan, Apr. 24, 1980, 55-054552; May 6, 1980, 55-59708

Int. Cl.⁴ H01L *21/70*

U.S. Cl. 427—53.1 **3 Claims**



1. A method of manufacturing a semiconductor read only memory comprising the steps of:

forming a plurality of MOS transistors on the surface of a semiconductor substrate,

connecting a plurality of silicon resistances to source and drain regions of said MOS transistors respectively,

forming an insulator film on the surface of said substrate to provide an unactivated ROM, and

irradiating with a laser beam selected silicon resistances through said insulator film to activate said ROM.

4,565,713

DEVICE AND METHOD FOR UNIFORMLY CURING UV PHOTOREACTIVE OVERVARNISH LAYERS USING MAGNETIC CONVEYORS

Robert H. Schultz, Broomfield, Colo., assignor to Adolph Coors Company, Golden, Colo.

Continuation-in-part of Ser. No. 525,059, Aug. 22, 1983, Pat. No. 4,503,086. This application Nov. 13, 1984, Ser. No. 670,035

The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.

Int. Cl.⁴ B05D *3/06*

U.S. Cl. 427—54.1 **19 Claims**

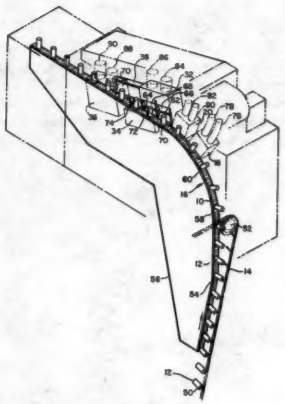
1. An apparatus for uniformly and completely curing uv photoreactive coatings on can bodies comprising:

magnetic conveyor means for non-rotatably holding said can bodies by external bottom portions and transporting said can bodies along a curved path having a curvature which exposes face portions and inside portions of said can bodies to radiation emitted from a predetermined location which impinges upon said face portions and said inside portions of said can bodies at an angle of incidence sufficient to completely cure said uv photoreactive coatings on said face portions and said inside portions, said face portion being substantially aligned with the direction of travel of said can bodies;

first irradiator means disposed at said predetermined location for producing uv radiation to cure said uv photoreactive coatings on said face portions and inside portions of said can bodies;

second irradiator means for irradiating side portions of said can bodies with uv radiation to completely cure uv photoreactive coatings on said side portions and achieve complete and uniform curing of uv photoreactive coatings on said can bodies;

whereby the axis of said can bodies is substantially parallel to the plane of said curved path.



16. A method of uniformly curing uv photoreactive coatings on can bodies comprising the steps of:

non-rotatably holding said can bodies by external bottom portions on a magnetic conveyor;

transporting said can bodies on said magnetic conveyor along a predetermined path having a predetermined portion which changes direction along an arcuate path by a predetermined angle;

exposing said can bodies to uv radiation from at least one uv irradiation source aligned radially outward from said arcuate path to cure said uv photoreactive coatings on face portions and inside portions of said can bodies, said face portions being substantially aligned with the direction of travel of said can bodies;

exposing said can bodies to uv radiation from at least one uv irradiation source disposed along side portions of said predetermined path to cure said uv photoreactive coatings on side portions of said can bodies;

whereby the axis of said can bodies is substantially parallel to the plane of said predetermined path.

4,565,714
LOW SURFACE ENERGY MATERIAL

Robert J. Koshar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 14, 1984, Ser. No. 620,438
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—54.1 26 Claims

1. A composition of matter comprising:

(1) a polyorganohydrosiloxane comprising at least two hydrogen atoms attached to silicon atoms and no more than two hydrogen atoms on any one silicon atom and a number average molecular weight of from 106 to 50,000;

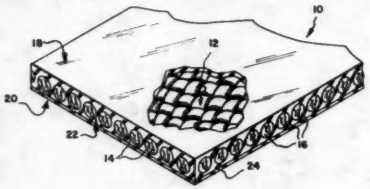
(2) an ethylenically-unsaturated perfluoropolyether monomer having segments comprising a plurality of repeating units of $—C_aF_{2a}O—$ in which "a" in each unit independently is an integer of 1 to 4, and at least one ethylenically-unsaturated group; and

(3) an effective amount of a hydrosilation catalyst for bringing about the condensation of said polyorganohydrosiloxane and said ethylenically-unsaturated perfluoropolyether monomer.

4,565,715
ELASTOMER-COATED BIAS REINFORCEMENT FABRIC AND METHOD FOR PRODUCING SAME

Delmar D. Long, Rock Hill, S.C., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 533,098, Sep. 16, 1983, Pat. No. 4,490,428, which is a continuation-in-part of Ser. No. 350,969, Feb. 22, 1982, Pat. No. 4,501,771. This application Sep. 20, 1984, Ser. No. 652,394
Int. Cl.[4] B05D *3/12*
U.S. Cl. 427—176 18 Claims



1. In a method for manufacturing elastomer-coated, bias fabric comprising:

a. transversely stretching a bias fabric having opposed surfaces, yarns, or fiber bundles, and interstices between said yarns or fiber bundles,

b. applying an elastomeric latex composition to both surfaces of said fabric while said fabric is maintained transversely stretched, such that said composition substantially penetrates the interstices of said fabric and provides an elastomeric coating of substantially uniform thickness, and

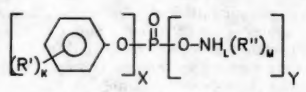
c. drying said coated latex composition, the improvement which comprises:

prior to stretching said bias fabric, pre-impregnating said bias fabric with a liquid non-elastomeric composition which facilitates the impregnation of said fabric by an elastomer but does not stabilize the orientation of said yarns or bundles in said fabric, said liquid non-elastomeric composition being an aqueous composition including an impregnation facilitating agent selected from the group consisting of a wetting agent, a fiber lubricant, a softening agent, and mixtures thereof.

4,565,716
WATER RESISTANT ALUMINUM PARTICLES AND COATING

James E. Williams, Jr., New Kensington, and Pamela L. Claassen, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 5, 1983, Ser. No. 510,982
Int. Cl.[4] C04B *31/40;* B05D *7/00*
U.S. Cl. 427—216 23 Claims



8. A method which comprises contacting metal particles with compound of the formulae of FIGS. 1A, 1B or 1C in an effective concentration to retard the reaction of the metal with water, thereby inhibiting the evolution of hydrogen gas, where in said formulae,

X=1 or 2,

Y=1 or 2,

and

$X+Y=3$;

where Z is hydrogen or means for neutralizing acid phosphate; and where R is benzo, a halo group, an alkyl group having from 1 to 24 carbon atoms, a cycloalkyl group having from 3 to 20 carbon atoms, an aryl group having from 6 to 40 carbon atoms, a halo substituted aryl group wherein said aryl has from 6 to 40 carbon atoms, an alpha or beta naphthyl, a halo substituted alpha or beta naphthyl, a 3 to 20 carbon atom cycloalkyl substituted alpha or beta naphthyl, an alpha or beta alkyl substituted naphthyl wherein said alkyl has from 1 to 24 carbon atoms, a heterosubstituent substituted aryl wherein said aryl has from 6 to 40 carbon atoms, and said heterosubstituent is selected from the group consisting of CN, NO_2, COOH, CHO, OH, a pyridinyl, an alpha or beta furyl, or an alpha or beta thienyl.

4,565,717
ANTISOILING TREATMENT OF SYNTHETIC FILAMENTS

Edward A. Hosegood, Salisbury, Md., and Ludwig E. Seufert, Seaford, Del., assignors to E. I. DuPont De Nemours and Company, Wilmington, Del.

Filed Oct. 20, 1983, Ser. No. 543,758
Int. Cl.[4] B05D *3/04*
U.S. Cl. 427—339 7 Claims

1. A process for producing synthetic polyamide filaments of enhanced soil resistance through the application of a fluorochemical antisoiling agent to the filaments as a yarn finish during a melt-spinning process which comprises applying to freshly solidified filaments a first finish composition containing a textile lubricant, an antisoiling fluorochemical and an epoxy resin having an epoxy equivalent of less than 200 and a molecular weight of less than 500 and subsequently applying any curing agent to substantially remove all of any free epoxide, such that the synthetic polyamide filaments resist soiling.

4,565,718

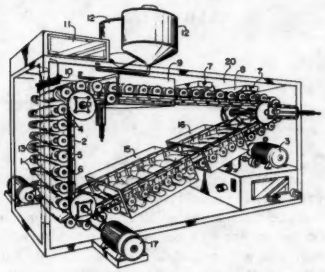
PROCESS AND APPARATUS FOR COATING THE SURFACES OF CONTAINERS WITH A MATERIAL

Iwao Katsuyama, Moriyama, and Aijiro Okuzumi, Hachiouji, both of Japan, assignors to Kyowa Denki Kagaku K.K., Tokyo, Japan

Continuation of Ser. No. 551,853, Nov. 15, 1983, abandoned. This application Dec. 26, 1984, Ser. No. 685,218

Int. Cl.⁴ B05D *1/02*

U.S. Cl. 427—420 **3 Claims**



1. A process for coating surfaces of plural containers with a liquid material as the containers are continuously transported in spaced apart relation in a stream comprising moving said stream of containers continuously along a span in the vertical direction while rotating the containers about their horizontal axes, the containers having similarly contoured surfaces defining a particular contoured edge as viewed in a horizontal plane, flowing said liquid material downwardly from just above the uppermost container of the vertical span so as to coat the surface of the uppermost container adjacent the horizontal contoured edge from one end to the other with said liquid material along a line which in a horizontal plane corresponds generally to the particular horizontal contoured edge of the container to be coated, moving the stream of containers along a span which communicates with the uppermost container position in the vertical span, so that the liquid material will be directed on the exposed surface of the uppermost container in the vertical span even while an adjacent container in the stream is moving above and relative to the vertical span along the span which communicates with the uppermost container position, the arrangement being such that there is always a surface of a container presented below said line of flow of liquid material, and when the coating of said uppermost container has been completed, feeding a subsequent container to the uppermost position in the vertical span.

4,565,719

ENERGY CONTROL WINDOW FILM SYSTEMS AND METHODS FOR MANUFACTURING THE SAME

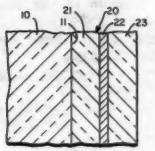
Roger W. Phillips; Patrick K. Higgins, both of Santa Rosa, and Peter H. Berning, Sebastapol, all of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Oct. 8, 1982, Ser. No. 433,511

Int. Cl.⁴ E06B *3/24*

U.S. Cl. 428—34 **33 Claims**

1. In an energy control sheet, a highly transparent substructure having first and second surfaces; a substantially transparent, thin film metal layer formed on one surface of said substructure; and a highly transparent thin film dielectric layer formed over said metal layer, said dielectric layer comprising a mixed metal oxide layer having metal constituents of at least one lanthanide series metal and at least one transition or semiconductor metal and being characterized by substantial water vapor impermeability, said lanthanide series metal being cerium and said transition or semiconductor metal being tin and each of said dielectric layers includes relative concentrations of cerium and tin in the range of about 20:80 weight percent to



about 70:30 weight percent, whereby the weatherability of said energy control sheet is substantially improved.

4,565,720

PACKAGING BAG

Kenta Yaeo; Shinji Kawamura, and Yoshiyuki Mihara, all of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,765

Int. Cl.⁴ B32B *7/02*

U.S. Cl. 428—35 **29 Claims**

1. A packaging bag comprising an outer layer made of a low density ethylene-based polymer or a mixture of said ethylene-based polymer and an ethylene-vinyl acetate copolymer, and an inner layer made of a mixture of 50 to 90% by weight of a high density polyethylene and from 50 to 10% by weight of an ethylene-α-olefin copolymer.

4,565,721

CARBOWAX STICKS FOR PREPARATION OF THE CARBOWAX FIXATIVE USE IN CANCER CYTOLOGY

Kenneth Sills, and Bernard Sills, both of 535 Cathedral Pkwy., New York, N.Y. 10025

Filed May 18, 1982, Ser. No. 379,313

Int. Cl.⁴ B32B *9/04*

U.S. Cl. 428—36 **7 Claims**

1. A molded stick of synthetic wax comprising a cylindrical, hollow, plastic tube filled with a wax, polyethylene glycol, of the general formula $HOCH_2(CH_2OCH_2)_xCH_2OH$, the two of which when thus combined function synergistically as a single unit to provide a source of measured quantities of wax whose weight can be calculated from linear measurements stamped on the surface of the tube-mold.

4,565,722

DEFORMABLE POLYMERIC COMPOSITIONS

Donald J. Highgate, and John D. Frankland, both of IH Laboratories Limited, Meopham Trading Estate, Meopham, Gravesend, Kent, United Kingdom (DA13 OLT)

Filed May 7, 1984, Ser. No. 607,689

Claims priority, application United Kingdom, May 9, 1983, 8312728; Feb. 29, 1984, 8405258

Int. Cl.[4] A61F *13/00*; A61C *5/04*

U.S. Cl. 428—36 5 Claims

1. An article for surgical or dental use, said article being of a polymeric composition and specifically shaped for its particular use and capable of water absorption in situ, said article having been prepared by straining in at least one direction while swollen with absorbed water and the straining permanently fixed by removal of the absorbed water whereby upon placement in a body cavity and subsequent exposure to water the dimensions of the article will change in a predetermined and controlled manner as to amount and only in a direction different from that in which it was strained.

4,565,723

COMPOSITE POLYMERIC PANEL AND PROCESS FOR MAKING SAME

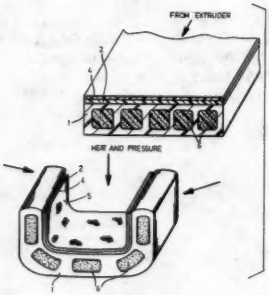
Elisabeth Hirsch, Wiener Neustadt, Austria, assignor to General Electric Plastics Structured Products Europe B.V., AC Bergen op Zoom, Netherlands

Filed Nov. 10, 1983, Ser. No. 550,922

Claims priority, application Austria, Nov. 10, 1982, 4092/82

Int. Cl.[4] B32B *3/00*; B29D *7/00*

U.S. Cl. 428—71 24 Claims



6. A composite panel comprising:

a basic skeletal layer of a first polymeric material, said skeletal layer consisting of two parallel plates interconnected by spaced-apart webs leaving voids therebetween; and

a reinforcing layer of a protective second polymeric material, said reinforcing layer overlying at least one of said plates of said skeletal layer;

said second polymeric material being of greater hardness than said first polymeric material.

12. A panel as defined in claim 6 wherein said voids are filled with a highly porous polymer.

13. A panel as defined in claim 12 wherein said highly porous polymer is a foam plastic.

4,565,724

ROOFING-MATERIAL

Philippus R. J. Smits, Basel, Switzerland, assignor to CBL Consolidated Ltd. BS, Switzerland

Filed Aug. 20, 1984, Ser. No. 642,119

Claims priority, application Netherlands, Aug. 24, 1983, 8302958

Int. Cl.[4] B32B *3/24*

U.S. Cl. 428—138 9 Claims

1. Roofing-material provided with perforations and comprising a bituminized carrier underlayer with a non-sticking lower surface and destined for being applied on a substratum and for being covered by an upper layer, which contains a carrier which is bituminized with modified bitumen, and which may be applied by means of torch, wherein the carrier of the roofing material is bituminized with modified bitumen, has a coating lying above and below the carrier, and the perforations extending therethrough having a smallest inner dimension of 50-110 mm, and preferably of about 70 mm, are so large that the upper layer can be directly applied on the roofing material by means of a torch thereby simultaneously adhering the upper layer and the bituminized carrier underlayer to the substratum, and the upper layer to the bituminized carrier underlayer itself, via the perforations only.

4,565,725

COMPOSITE PLASTIC TRACK AND METHOD OF MAKING

William S. Spamer, Roswell, Ga., and Alan D. Preis, Peninsula, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 2, 1984, Ser. No. 585,396

Int. Cl.[4] B32B *3/28*

U.S. Cl. 428—167 7 Claims

1. A plastic track comprising an elongated base plate formed of high impact polystyrene and a low friction slide plate bonded to the upper surface of said base plate and formed of high impact polystyrene impregnated with 2% to 10% by weight of organopolysiloxane.

4,565,726

MAGNETIC RECORDING MEDIA HAVING FERROMAGNETIC AND FERRITE PARTICLES IN THE MAGNETIC LAYER THEREOF

Toshihiko Oguchi, Atsugi; Hirohisa Kato, Ebina; Moriyasu Wada, Ninomiya, and Toshimitsu Asano, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 26, 1983, Ser. No. 488,759

Claims priority, application Japan, May 24, 1982, 57-86425

Int. Cl.[4] G11B *5/68*

U.S. Cl. 428—328 9 Claims

1. A magnetic recording medium comprising 5 to 100 parts by weight of hexagonal ferrite particles having an average particle diameter of 0.01 to 0.2 microns, and 100 parts by weight of ferromagnetic particles having a saturation magnetization of 70 to 220 emu/g and an average particle diameter within the range of 0.05 to 1 microns, said hexagonal ferrite particles and said ferromagnetic particles being dispersed in a

single layer comprised of a resinous binder, wherein the said hexagonal ferrite particles have a coercive force (iHc) of from 600 to 2000 Oe, and said ferromagnetic particles have a coercive force (iHc) of from 300 to 2000 Oe.

4,565,727

NON-WOVEN ACTIVATED CARBON FABRIC

Robert D. Giglia, Rye, N.Y., and Edward A. Battistelli, Stratford, Conn., assignors to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 531,366, Sep. 12, 1983, abandoned. This application Apr. 23, 1985, Ser. No. 725,527

Int. Cl.[4] B32B *5/16, 7/14, 31/00*

U.S. Cl. 428—172 4 Claims

1. An air and water vapor permeable, toxic vapor absorptive, non-woven fabric material comprising a wet-laid sheet containing fibrillated acrylic fiber, activated carbon fiber and activated carbon particles, wherein the concentration of fibrillated acrylic fiber ranges from about 5–25% by weight based on the total weight of fibers and particles, the concentration of activated carbon fiber ranges from about 10–75% by weight, same basis, and the concentration of activated carbon particles ranges from about 15–80% by weight, same basis.

4,565,728

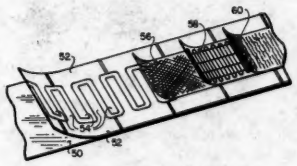
SYSTEM AND METHOD FOR APPLICATION OF INTERNAL HEATING TO THERMALLY RESPONSIVE STRUCTURES

James B. Gray, and Robert A. Joyce, both of San Diego, Calif., assignors to Seam Team, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 464,132, Feb. 4, 1983, Pat. No. 4,483,896. This application Oct. 1, 1984, Ser. No. 656,599

Int. Cl.[4] B32B *3/00*

U.S. Cl. 428—200 21 Claims



1. A structural forming member comprising:

a thermally responsive substrate;

electrical resistance circuit means extending throughout the area of said substrate and including multiple terminal means located at multiple positions throughout said substrate for selective application of electrical current to selective areas of said circuit means for heating selective areas of said substrate.

4,565,729

POLYURETHANE LAMINATE OF CONTRASTING LAYERS AND PROCESS THEREFOR

Paul E. Liggett, Wooster, and David L. Braun, North Canton, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 9, 1983, Ser. No. 502,867

Int. Cl.[4] B32B *27/20, 27/40*

U.S. Cl. 428—201 12 Claims

1. A polyurethane laminate, comprising: at least

a first polyurethane layer, and

a second contiguous polyurethane layer residing directly on said first layer, said second layer having a contrasting color with respect to said first layer, said second layer consisting of one or more polyurethane layers.

3. A polyurethane laminate according to claim 1, including two or more polyurethane layers, wherein each said layer is contiguous to another layer, wherein each layer has a contrasting color to said contiguous layer and resides directly thereon.

4,565,730

COATING COMPOSITION, IN PARTICULAR FOR PRODUCING A TRANSPARENT TOPCOAT OF A MULTILAYER COATING, A PROCESS FOR PRODUCING COATINGS, AND AN ARTICLE COATED WITH A MULTILAYER COATING

Ulrich Poth, Münster; Fritz Bartol, Hamm, and Adolf Machholz, Würzburg, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,755

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3322037

Int. Cl.[4] C08F *8/30;* B05D *1/36*

U.S. Cl. 428—204 12 Claims

1. A binder for coating compositions applied as transparent topcoats of multilayer coatings in the wet-on-wet method, consisting essentially of:

(A) 50 to 90% by weight, based on total acrylic polymers, of a first acrylic polymer having a molecular weight of 800 to 4,000; a hydroxyl number of 80 to 180; and a glass transition temperature below −10° C.;

(B) 10 to 50% by weight, based on total acrylic polymers, of a second acrylic polymer having a molecular weight of 3,000 to 10,000; a hydroxyl number of 40 to 120; and a glass transition temperature of −10° C. to +70° C.; and

(C) polyisocyanates selected from the group consisting of aliphatic polyisocyanates, cycloaliphatic polyisocyanates, and mixtures thereof in a sufficient amount that there are 0.8 to 1.3 isocyanate groups per hydroxyl group of components (A) and (B).

4,565,731

IMAGE-FORMING MEMBER FOR ELECTROPHOTOGRAPHY

Toshiyuki Komatsu, Kawasaki; Yutaka Hirai; Katsumi Nakagawa, both of Tokyo, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 36,226, May 9, 1979, Pat. No. 4,471,042. This application Sep. 15, 1982, Ser. No. 418,293

Claims priority, application Japan, May 4, 1978, 53-53605; May 4, 1978, 53-53506

Int. Cl.[4] B32B *7/12, 9/04;* G03G *5/04;* H01L *13/00*

U.S. Cl. 428—212 13 Claims

1. An article comprising a light-sensitive film constructed of at least a single layer of at least one photoconductive material on a substrate, wherein at least one layer of said at least a single layer is made of an amorphous photoconductive material whose composition is expressed by a formula $[Si_{1-x}C_x]_{1-y}[H]_y$ wherein $0.001 \leqq x \leqq 0.3$ and $0.01 \leqq y \leqq 0.4$, whereby said light-sensitive film exhibits photoconductive characteristics.

4,565,732

VINYL CHLORIDE POLYMER LAMINATE

Richard W. Stamper, Lambertville, Mich., and Robert C. Hultz, Toledo, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 518,247, Jul. 28, 1983, Pat. No. 4,515,744.
This application Mar. 6, 1985, Ser. No. 709,242
Int. Cl.[4] B32B *27/08;* E04C *1/00;* E04B *5/00*
U.S. Cl. 428—215 3 Claims

1. A building having a roof wherein the structural or insulation member of the roof contains a roofing membrane comprising a laminate of

(A) a first layer having a thickness of from about 12 to 50 mils and comprising a compounded and stabilized vinyl chloride polymer plastisol composition containing antimony trioxide and

(B) a second layer on said first layer having a thickness of from about 12 to 50 mils and comprising a compounded and stabilized vinyl chloride polymer plastisol composition containing titanium dioxide,

said layers having been heated at a temperature of from about 250° to 400° F. for from about one to five minutes to fuse said layers and to adhere said layers together to obtain a flexible vinyl chloride polymer laminate and said layer (A) being adjacent said structural or insulation member of said roof.

4,565,733

PACKAGING MATERIAL FOR PHOTOSENSITIVE MATERIALS

Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed May 1, 1984, Ser. No. 605,925
Claims priority, application Japan, May 2, 1983, 58-76271
Int. Cl.[4] B32B *27/32, 3/26*
U.S. Cl. 428—215 16 Claims

1. A laminate film comprising at least three layers comprised of a foam-sheet sandwiched between two uniaxially molecular oriented thermoplastic resin films, wherein:

(a) the thickness of the foam-sheet is 0.3–2.0 mm, and the foaming magnification is 5–50 times;

(b) the two uniaxially molecular oriented films are so hot-welded to the both surfaces of the foam-sheet, without or with an interposing hot-melting adhesive layer therebetween, that the respective molecular orientation axes cross each other at an angle of 30 degrees or more; and

(c) the thickness of the hot-welded laminate film has been compressed to 40–85% (thickness retention) of the theoretical sum of each layers.

11. The laminate film for packaging photosensitve materials, as defined in claim 1 wherein;

the said uniaxially molecular oriented film as a high density polyethylene-uniaxially oblique-stretched-film having a density of 0.94 g/cm^3 or more and a thickness of 15–70 microns, the elongation magnification is 2–6 times, the film contains 1–7 wt% of carbon black, and the cross angle of the stretch-axes of the two stretched film layers is 45–90 degrees;

the said hot-melting adhesive layer is a polyolefin type thermoplastic resin, and the layers are hot-welded at 250°–350° C.; and

the said foam-sheet is substantially comprised of polyethylene, polypropylene and/or polystyrene.

4,565,734

MAGNETIC RECORDING MEDIUM

Yoshihiro Arai; Akira Nahara, and Kiyotaka Fukino, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1984, Ser. No. 589,553
Claims priority, application Japan, Mar. 18, 1983, 58-45717
Int. Cl.[4] G11B *5/72*
U.S. Cl. 428—216 10 Claims

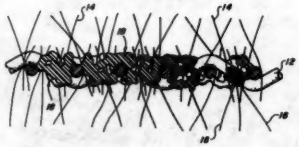
1. A magnetic recording medium comprising a nonmagnetic substrate, a thin magnetic metal film layer provided on the surface thereof with a metallic oxide layer, and a polymer film formed by plasma polymerization which is overlaid on said metallic oxide layer so as to cover said metallic oxide layer.

4,565,735

PAPERMAKERS' FELT

August Murka, Jr., Arnprior, and Michael Marcellus, Sandpoint, both of Canada, assignors to Huyck Corporation, Wake Forest, N.C.

Filed Oct. 19, 1984, Ser. No. 62,503
Claims priority, application Canada, Oct. 19, 1983, 439316
Int. Cl.[4] B32B *7/02*
U.S. Cl. 428—234 13 Claims



1. A papermaker's felt for use with a paper-making machine comprising:

a base layer of fabric formed into a belt, and

a batt layer having a major portion of a discontinuous phase which includes fibers having a relatively high melting point, and a minor portion of a continuous phase which includes fusible material, said continuous phase also defining channels for the drainage of water, said fusible material having a melting point lower than the melting point of the fibers of said discontinuous phase and higher than the highest expected operating temperature of the papermaking machine, said fusible material fused to said fibers and said base layer.

4,565,736

FIBROUS SURGICAL COMPRESS WITH COVER LAYER AUTOGENOUSLY BONDED TO ABSORPTION LAYER

Karl H. Stein, Hemsbach, and Manfred Krull, Heiligkreuzsteinach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstr, Fed. Rep. of Germany

Continuation of Ser. No. 301,101, Sep. 17, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,073
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036814
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—286 11 Claims

1. A fibrous surgical compress, which comprises: a fibrous absorption layer and an overlapping, liquid permeable, fibrous cover layer having a smooth outer surface which is free of protruding nap and fiber ends, the cover layer being autogene-

ously bonded to the absorption layer by direct formation of tacky cover layers fibers on the absorption layer, said tacky fibers thereafter drying to produce pressureless, interlayer autogeneous bonding and pressureless, random fashion, intralayer fiber autogeneous bonding; said fibers being comprised of hydrophobic, hydrolysis-resistant, aliphatic urethane fibers.

4,565,737

HEAT-SENSITIVE TRANSFER MATERIAL

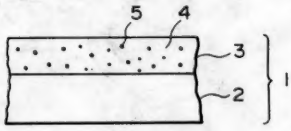
Katsuhiko Nishide, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 602,710

Claims priority, application Japan, May 2, 1983, 58-76178; May 2, 1983, 58-76179

Int. Cl.⁴ B41M *5/26*

U.S. Cl. 428—321.5 **7 Claims**



1. A heat-sensitive transfer material comprising a support and a heat-transferable ink layer formed on said support, said heat-transferable ink layer comprising a heat-fusible binder, a colorant and a heat-decomposable foaming agent, said colorant and heat-decomposable foaming agent being dispersed in said heat-fusible binder, and said heat-decomposable foaming agent being contained in said heat-transferable ink layer in a proportion of 30 parts by weight or less per 100 parts by weight of said heat-fusible binder.

4,565,738

MULTIPLE-LAYER POLYOLEFIN FILMS

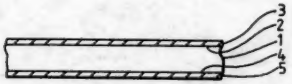
John R. Purdy, Hertfordshire, England, assignor to Imperial Chemical Industries, PLC, London, England

Continuation-in-part of Ser. No. 514,609, Jun. 1, 1983, abandoned. This application May 22, 1984, Ser. No. 612,919

Claims priority, application United Kingdom, Jun. 1, 1983, 8315001

Int. Cl.⁴ B32B *27/32*

U.S. Cl. 428—349 **10 Claims**



1. A multiple-layer film comprising a polyolefin base layer and, on at least one surface thereof, a receptive layer wherein the polyolefin of the base layer comprises a propylene polymer and the at least one receptive layer comprises a blend of

(a) a propylene-ethylene end block copolymer containing from 1 to 20% of ethylene by weight of the end block copolymer, and

(b) an ethylene-monoalphaolefin random copolymer containing from 1 to 15% by weight of the random copolymer of a monoalphaolefin the molecule of which contains from 3 to 10 carbon atoms,

the weight ratio of the propylene-ethylene end block copolymer to the ethylene-monoalphaolefin random copolymer in the blend being within a range of from 0.5:1 to 99:1.

4,565,739

ORIENTED MULTI-LAYER HEAT SEALABLE FILM

Melvil B. Clauson, Newark, and John R. Wagner, Jr., Rochester, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1984, Ser. No. 687,391

Int. Cl.⁴ B32B *27/00*

U.S. Cl. 428—349 **10 Claims**

1. A heat sealable multi-layer structure comprising:

(a) a substrate comprising a polyolefin film;

(b) a skin layer on at least one surface of (a), said layer comprising a member selected from the group consisting of a medium density polyethylene, a high density polyethylene, mixtures thereof and blends of (I) said member and (II) polypropylene;

(c) a primer coating between layers (b) and (d) on at least one of said layer (b); and

(d) a heat sealable layer on said coating (c) said heat sealable layer being a member selected from the group consisting of a vinylidene chloride polymer and an acrylic polymer.

4,565,740

SURFACE MODIFIED SOLID SUBSTRATE AND A METHOD FOR ITS PREPARATION

Carl-Gustaf Gölander, Stockholm, and Rolf Larsson, Ekerö, both of Sweden, assignors to IRD-Biomaterial AB, Bromma, Sweden

Filed Feb. 8, 1983, Ser. No. 464,935

Claims priority, application Sweden, Feb. 9, 1982, 8200750

Int. Cl.⁴ A61F *1/00*; A61M *25/00*; B01D *39/00*; B32B *27/08*

U.S. Cl. 428—409 **39 Claims**

1. A surface modified solid substrate, wherein the substrate carries a complex adsorbed thereto which complex is of a polymeric cationic surfactant and a dialdehyde, the surfactant containing primary amino nitrogens as well as secondary and/or tertiary amino nitrogens, and the dialdehyde having 1–4 carbon atoms between the two aldehyde groups.

18. A method of surface modifying a solid substrate by introducing ionic charges on the substrate surface, which comprises contacting the substrate with a polymeric cationic surfactant which contains primary amino nitrogens as well as secondary and/or tertiary amino nitrogens, and a dialdehyde which contains 1–4 carbon atoms between the two aldehyde groups, at such conditions that a complex of the polymeric cationic surfactant and the dialdehyde is formed, which complex is adsorbed to the substrate surface.

4,565,741

BORON NITRIDE FILM AND PROCESS FOR PREPARING SAME

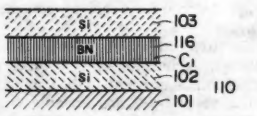
Kiyoshi Morimoto, Mobara, and Toshinori Takagi, Nagaoka-kyo, both of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Feb. 28, 1984, Ser. No. 584,403

Claims priority, application Japan, Feb. 28, 1983, 58-30792

Int. Cl.⁴ B32B *9/00, 17/06, 19/00*

U.S. Cl. 428—427 **2 Claims**



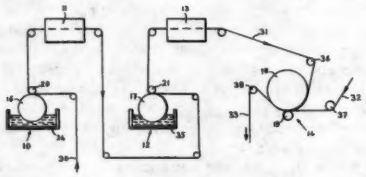
1. A boron nitride film grown on the surface of a substrate by an ionized cluster beam deposition process to be orientated to a predetermined axis of said film, wherein said substrate is formed of an amorphous insulating material, said film being C-axis oriented on said substrate.

4,565,742

PROCESS FOR FORMING A SEALANT WEB-PVDC-BASE FILM LAMINATE

Theodore J. Lang, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Oct. 20, 1983, Ser. No. 543,759
Int. Cl.[4] B32B *27/08*; B05D *3/02*
U.S. Cl. 428—476.3 14 Claims



1. A film laminate comprising a base film and a first sealant web with a coating of polyvinylidene chloride sandwiched therebetween,

said first sealant web being selected from the group consisting of (a) film made from a copolymer of ethylene and vinyl acetate, and (b) a film made from a blend of (i) a copolymer of ethylene and vinyl acetate with (ii) a homopolymer of ethylene, or a copolymer of ethylene and one or more C_4 to C_{10} α-olefins, said homopolymer or copolymer having a density of from about 0.915 to about 0.955 g/cm^3, or blends of said homopolymer and copolymer,

said base film being selected from the group consisting of oriented nylon film, oriented polyester film, oriented polypropylene film, cast nylon film and a second sealant web, said second sealant web being selected from the same group as said first sealant web and having a slip coefficient of less than about 0.4,

said polyvinylidene chloride coating consisting of at least one layer having a crystallinity index of less than 1.15 if dried and allowed to stand for 30 days at 20° C. and, if the base film is selected from nylon film, polyester film or polypropylene film, the layer in contact with the base film having a crystallinity index of from 1.12 to 1.25 if dried and allowed to stand for 5 days at 40° C.

4,565,743

PACKAGE MATERIALS FOR BUNDLE-WRAPPING UNIT CASES

Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 8, 1984, Ser. No. 578,290
Claims priority, application Japan, Feb. 14, 1983, 58-21614
Int. Cl.[4] B32B *27/30*
U.S. Cl. 428—522 18 Claims

1. A package material for wrapping unit cases in a bundle which comprises:

(a) a biaxially-stretched polypropylene film substrate having a stretching magnification of 2–15 times, coefficients of the thermal contraction both in the longitudinal and transverse directions of 2–8%, and a relative ratio of the coefficients of the thermal contraction in the longitudinal and transverse directions of 40% or less;

(b) polyvinylidene chloride resin coating applied onto at least one surface of the polypropylene film substrate; and

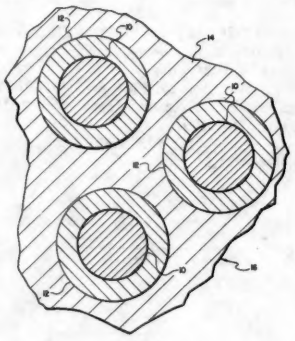
(c) an antistatic agent incorporated in at least one of the layers constituting the package material.

4,565,744

WETTABLE COATING FOR REINFORCEMENT PARTICLES OF METAL MATRIX COMPOSITE

Robert J. Walter, Thousand Oaks, and Jerhong Lin, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 30, 1983, Ser. No. 556,660
Int. Cl.[4] B22F *3/00*
U.S. Cl. 428—570 8 Claims



1. Improved submicron reinforcing particles for use in forming a metal matrix composite in which the material of the particles is not easily wettable by the metal; said improved particles comprising:

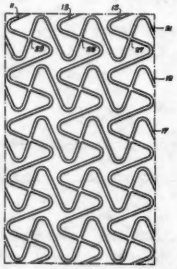
reinforcing submicron particles coated on their surfaces with a material which is easily wettable by the matrix metal.

4,565,745

METALLIC STRETCH FABRIC

Rimvydas A. Kaminskas, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 10, 1984, Ser. No. 649,109
Int. Cl.[4] H01Q *15/14*
U.S. Cl. 428—596 4 Claims

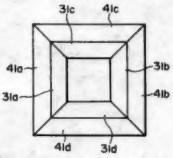


1. A metallic mesh for use as the dish material of a radio-frequency dish antenna, formed as a single piece of metal and shaped in a pattern having a first set of a plurality of parallel lines, each line in the set being formed in the shape of a periodically repeating curve, and a second set of a plurality of parallel lines intersecting the first set, each line in the additional set being formed in the shape of a periodically repeating curve, the second set of lines being substantially orthogonal in direction with respect to said first set of lines; and wherein the periodically repeating curve is approximately sinusoidal in shape.

4,565,746
IRON CORE FOR A STATIONARY INDUCTION APPARATUS

Iwao Hayase, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00421, § 371 Date Jun. 29, 1983, § 102(e) Date Jun. 29, 1983
PCT Filed Oct. 28. 1982, Ser. No. 522,380
Claims priority, application Japan, Oct. 30, 1981, 56-175340
Int. Cl.⁴ H01F 27/24
U.S. Cl. 428—638 4 Claims



3. A magnetic core comprising a plurality of laminates stacked in a first direction, each said laminate comprising an alternate laminate of a thin substantially unbent amorphous magnetic strip and a substantially unbent silicon steel sheet, said silicon steel sheet being disposed inwardly of said amorphous magnetic strip and closer to the center of said core in a second direction perpendicular to said first direction, wherein each said amorphous magnetic strip comprises a plurality of contiguous amorphous magnetic sheets disposed along said first direction.

4,565,747
BORON NITRIDE CONTAINING TITANIUM NITRIDE, METHOD OF PRODUCING THE SAME AND COMPOSITE CERAMICS PRODUCED THEREFROM

Hiroyuki Nakae, 14-7, Kamiasao 1 chome, Asao-ku, Kawasaki-shi, Kanagawa; Toshitsugu Matsuda, 67-4, Futamatagawa 1 chome, Asahi-ku, Yokohama-shi, Kanagawa; Naoki Uno, Furukawa Denko Kibogaoka Shataku, 11-3, Nakakibogaoka, Asahi-ku, Yokohama-shi, Kanagawa; Yukio Matsunami, Nihon Jukagaku Kogyo Daini Mitakaryo, 8-7-6, Kamirenjaku, Mitaka-shi, Tokyo; Toshio Hirai, 4-91, Takamori 3-chome, Izumi-shi, Miyagi, and Tsuyoshi Masumoto, 8-22, Kamisugi 3-chome, Sendai-shi, Miyagi, all of Japan, assignors to Research Development Corporation, Tokyo; Hiroyuki Nakae, Kawasaki; Toshitsugu Matsuda; Naoki Uno, both of Yokohama; Yukio Matsunami, Tokyo; Toshio Hirai, Izumi and Tsuyoshi Masumoto, Sendai, all of, Japan

Filed Nov. 9, 1984, Ser. No. 670,154
Claims priority, application Japan, Nov. 11, 1983, 58-211035; Nov. 11, 1983, 58-211036
Int. Cl.⁴ B32B 18/00; C04B 35/58
U.S. Cl. 428—698 22 Claims

1. Boron nitride produced by chemical vapor deposition, said boron nitride containing titanium nitride in an amount of 0.05 to 10 wt. %.

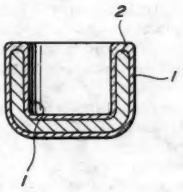
11. A method of producing boron nitride containing titanium nitride in an amount of 0.05 to 10 wt. % by a chemical vapor deposition, comprising the steps of:

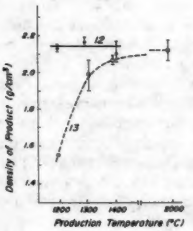
(a) mounting a substrate shaped into a desired form in a reactor;

(b) evacuating said reactor and heating said substrate to the temperature range of 500° to 2000° C.;

(c) introducing a boron depositing source gas, a nitrogen depositing source gas, a titanium depositing source gas and carrier and/or diluent gas into said evacuated reactor, and then contacting said source gases with said substrate within the substrate temperature ranging from 500° to 2000° C. and at the total internal pressure of said reactor ranging from 0.1 to 770 torr, thereby depositing said boron nitride containing titanium nitride, the ratio of said titanium depositing source gas to said boron depositing source gas being controlled to give a Ti/B atomic ratio of 0.005 to 0.45;

(d) continuing to feed said source gases and said carrier and/or diluent gas while degassing to maintain said total internal pressure of said reactor within said pressure range until the desired amount of said boron nitride is deposited onto said substrate;





(e) cooling and taking out said substrate; and

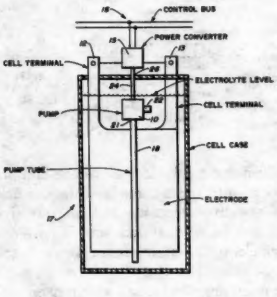
(f) removing said deposited boron nitride from said substrate.

22. Boron nitride type composite ceramics composed of (1) one or more boron nitride ceramic base layers containing titanium nitride in an amount of 0.05 to 10 wt. % which is produced by chemical vapor deposition and (b) one or more BN ceramic surface layers.

4,565,748
MAGNETICALLY OPERATED ELECTROLYTE CIRCULATION SYSTEM

Ernest A. Dahl, 3247 Breaker, Ventura, Calif. 93003

Filed Jan. 31, 1985, Ser. No. 696,968
Int. Cl.⁴ H01M 2/38
U.S. Cl. 429—10 8 Claims



1. A magnetic system for circulating liquid acid electrolyte

in battery cells to prevent electrolyte stratification, comprising:

a. an electrolyte flow tube made from non-corrodable material forming an electrolyte passageway which extends from the lower portion to the upper portion of a battery cell; the upper end of said flow tube being lower than the electrolyte level in said battery cell;

b. a magnetic pump means positioned about said electrolyte flow tube;

c. said magnetic pump means comprising a plurality of adjacent electromagnetic coils and respective magnetic cores with pole pieces located along said electrolyte flow tube; the pole pieces of said magnetic cores being positioned adjacent said flow tube such that a magnetic field generated between said pole pieces by said electromagnetic coils when energized passes directly across the electrolyte passageway within said flow tube;

d. power means for providing at least two-phase AC current to the plurality of electromagnetic coils along said electrolyte flow tube such that at any one given instant the phasing of the magnetic field generated by one electromagnetic coil is leading while that of the next adjacent electromagnetic coil is neutral and the magnetic field of the following adjacent electromagnetic coil is lagging 90°, with repeating sequence;

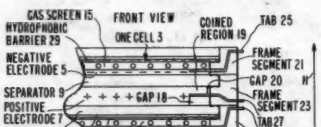
e. the sequentially created magnetic fields operating to sequentially magnetically charge electrolyte within the flow tube between the respective pole pieces to a fixed magnetic state for the given instant, such that change of phase of the AC current causes change of phase in the magnetic fields across the electrolyte flow tube resulting in the sequential attraction of electrolyte in one portion of the flow tube and repulsion of electrolyte in the next adjacent portion of the flow tube to provide a minute pumping action that forces the acid electrolyte to move through said flow tube passageway, thereby preventing stratification of the acid electrolyte.

4,565,749

LIGHTWEIGHT BIPOLAR METAL-GAS BATTERY

Gerrit van Ommering, San Francisco, and Charles W. Koehler, Fremont, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 26, 1984, Ser. No. 686,353
Int. Cl.[4] H01M *12/06*
U.S. Cl. 429—27 10 Claims



1. A bipolar metal-gas battery cell stack comprising:

several electrically series-connected stacked cells each having one negative electrode and one positive electrode, wherein series electrical connections between oppositely polarized electrodes of adjacent cells are made external to the cells;

means for confining electrolyte within each cell; and

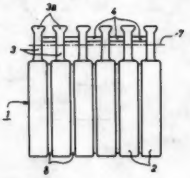
means for confining overcharge gasses within each cell at a region proximate the positive electrode.

4,565,750

ELECTROLYTE CONTAINER FOR BATTERY AND METHOD OF FILLING ELECTROLYTE

Toshihiro Isoi, Takatsuki; Michio Yashima, Kawagoe, and Shuuji Takahashi, Ooi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Yuasa Battery Co., Ltd., Osaka, both of, Japan

Filed Oct. 1, 1984, Ser. No. 656,373
Claims priority, application Japan, Sep. 30, 1983, 58-184046; Oct. 10, 1983, 58-156408[U]
Int. Cl.[4] H01M *2/36*
U.S. Cl. 429—72 3 Claims



1. An electrolyte container for use in simultaneously filling electrolyte into the individual cells of a multi-cell dry-charged storage battery, said container comprising a shell body having a plurality of spaced cell units, equal in number to the number of individual cells in the dry-charged storage battery to be filled, each container cell unit enclosing the quantity of electrolyte required to fill the corresponding cell unit of the multi-cell battery to be filled with electrolyte, each of said container shells having a filling tube, said cell units and said filling tubes thereon being spaced on said electrolyte container to coincide with the spacing between said individual cells on said multi-cell battery and the filling ports of said individual battery cells to enable the individual one of said container shell filling tubes to fit into the corresponding one of the filling ports of the corresponding battery cell, each of said container filling tubes includes a flow regulator having a hole of a prescribed size in its inside.

4,565,751

CATHODE FOR HIGH CURRENT DENSITY AND HIGH POWER DENSITY ELECTROCHEMICAL CELLS

Marilyn A. Faust, Rochester, and Hans W. Osterhoudt, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,350
Int. Cl.[4] H01M *6/16, 4/40*
U.S. Cl. 429—94 16 Claims

1. A cathode comprising a current collector coated with a dispersion of $(CF_x)_n$ wherein x is equal to or less than 1.2 and n is an indeterminately large number, a current carrier and a binder characterized in that the current collector is a metal foil, the binder is sufficiently adhesive to adhere the coated dispersion to the metal foil and the coated dispersion has a porosity of 57–73 percent.

4,565,752

ELECTROCHEMICAL CELL HAVING WOUND ELECTRODE STRUCTURES

Franz Goebel, Sudbury; Timothy B. Haskins, Concord, and David C. Batson, Melrose, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

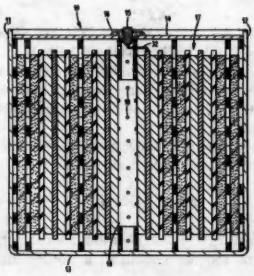
Filed Dec. 24, 1984, Ser. No. 685,638
Int. Cl.[4] H01M *6/10, 6/16*
U.S. Cl. 429—94 4 Claims

1. An electrochemical cell comprised of:

a metal case having a cylindrical wall and a flat bottom;

a metal cover in contact with the wall of said metal case;

a terminal extending through the center of said cover and electrically insulated therefrom;
a first electrode structure including a first elongated metal substrate having a first edge and a second edge extending along its length, a first end, and a second end;
a first electrode material covering both sides of said first substrate except for bare borders adjacent to said first and second edges of said first substrate and a bare end extending from said first end;
a second electrode structure including a second elongated metal substrate generally covered with a second electrode material;
an insulating porous sheet interposed between said first electrode structure and said second electrode structure;



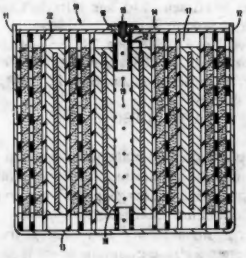
said first electrode structure, said insulating porous sheet and said second electrode structure wound in a coil with said bare end of said first substrate on the outside of said coil;
said first substrate having a width greater than said second substrate;
said coil arranged within said case with one edge of said first substrate in electrical contact with said flat bottom and the other edge of said first substrate in electrical contact with said cover;
said bare end of said first substrate in contact with said wall;
conducting means for providing electrical communication between said first electrode structure and said terminal; and
an electrolytic solution substantially immersing said coil.

4,565,753

ELECTROCHEMICAL CELL HAVING WOUND ELECTRODE STRUCTURES

Franz Goebel, Sudbury; David C. Batson, Melrose, and Timothy B. Haskins, Concord, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Apr. 3, 1985, Ser. No. 719,833
Int. Cl.[4] H01M *6/10, 6/16*
U.S. Cl. 429—94 **1 Claim**



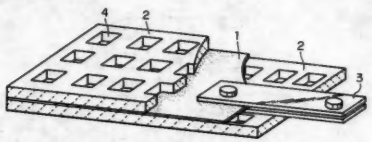
1. An electrochemical cell comprised of:
a metal case having a cylindrical wall and a flat bottom;
a metal cover in contact with the wall of said metal case;
a terminal extending through the center of said cover and electrically insulated therefrom;
a first electrode structure including a first elongated metal substrate having a first edge and a second edge extending along its length, a first end, and a second end;
a first electrode material covering both sides of said first substrate except for bare borders adjacent to said first and second edges of said first substrate and a bare end extending from said first end;
a second electrode structure including a second elongated metal substrate generally covered with a second electrode material;
a multiplicity of sheets of insulating porous material interposed between said first electrode structure and said second electrode structure;
said first electrode structure, said insulating porous sheets and said second electrode structure wound in a coil with said bare end of said first substrate on the outside of said coil;
said first substrate and said sheets of porous insulating material having a width greater than said second substrate;
said coil arranged within said case with one edge of said first substrate and one edge of each said sheets of porous insulating material in contact with said flat bottom and the other edge of said first substrate and the other edge of each of said sheets of porous insulating material in contact with said cover;
said bare end of said first substrate in contact with said wall conducting means for providing electrical communication between said first electrode structure and said terminal; and
an electrolytic solution substantially immersing said coil.

4,565,754

ELECTRODE FOR ORGANIC BATTERY

Hiromochi Muramatsu, Nagoya, and Atsushi Watanabe, Toyokawa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

PCT No. PCT/JP83/00235, § 371 Date Jun. 13, 1984, § 102(e) Date Jun. 13, 1984, PCT Pub. No. WO84/02231, PCT Pub. Date Jun. 7, 1984
PCT Filed Jul. 21, 1983, Ser. No. 621,923
Claims priority, application Japan, Nov. 26, 1982, 57-207340
Int. Cl.[4] H01M *4/00*
U.S. Cl. 429—213 **3 Claims**



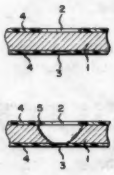
1. An electrode assembly for an organic battery comprising an electrode made from an organic conductive material, and a layer of carbon material covering about 30–70% of the surface of the electrode and having a plurality of holes therein so that about 70–30% of the surface of the electrode is exposed.

4,565,755

METHOD OF MANUFACTURING SHADOW MASK

Yasuhisa Ohtake, and Hiroshi Tanaka, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1984, Ser. No. 583,329
Claims priority, application Japan, Feb. 28, 1983, 58-30835
Int. Cl.[4] G03F 9/00; B41C 1/00
U.S. Cl. 430—5 4 Claims



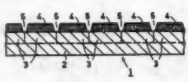
1. A method of manufacturing a shadow mask, comprising the steps of:
forming photoresist films on first and second surfaces of a sheet made of a shadow mask material;
forming latent images on said first and second surfaces by selectively exposing said photoresist films, respectively;
developing said latent images to form photoresist film patterns on said first and second surfaces, respectively; and
spraying an etching solution onto said first and second surfaces to etch bared portions of said shadow mask sheet to form apertures with a large opening side on said first surface and a small opening side on said second surface, wherein the photoresist film formed on said first surface is thicker than the photoresist film formed on said second surface, and wherein said spraying step includes a first spraying step and a second spraying step, wherein an impact strength of the etching solution against the shadow mask sheet in said first step is greater than that in said second step.

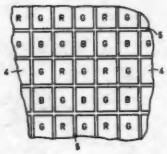
4,565,756

COLOR IMAGING DEVICE

Howard C. Needs, and Lodewijk Blok, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 434,666, Oct. 15, 1982, abandoned. This application Oct. 12, 1984, Ser. No. 660,256
Claims priority, application Netherlands, Nov. 10, 1981, 8105071
Int. Cl.[4] G03F 9/00; G03C 5/00
U.S. Cl. 430—7 10 Claims





1. A method of manufacturing a color imaging device comprising the steps of:
providing an imaging device substrate;
providing a transparent layer on the substrate;
providing, by a photolithographic process, a pattern of filter elements separated by separation regions in the transparent layer;
providing a barrier layer over the transparent layer;
providing, by a photolithographic process, a pattern of apertures in the barrier layer, the pattern of apertures corresponding to the locations of a first system of filter elements for passing light of a first color;
providing a dye, through the apertures in the barrier layer, to dye the filter elements of the first system; and
removing the barrier layer.

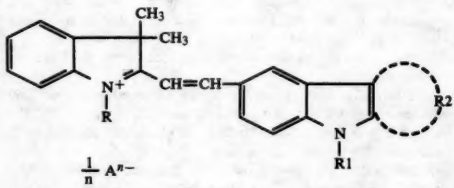
4,565,757

PHOTOCONDUCTIVE COMPOSITIONS SENSITIVE TO BOTH LASER LIGHT AND TUNGSTEN HALIDE LIGHT

Anthony J. Chalk, Leeds; Graham Charnock, Huddersfield; Allen P. Gates, Knaresborough; David E. Murray, Leeds, and Ian S. Smith, Bradford, all of England, assignors to Vickers PLC, England

Filed Dec. 15, 1983, Ser. No. 562,696
Claims priority, application United Kingdom, Dec. 16, 1982, 8235884
Int. Cl.[4] G03G 5/04
U.S. Cl. 430—83 9 Claims

1. A photoconductive composition comprising at least one photoconductor and, as sensitiser, a compound having the formula;



wherein R represents alkyl; R1 represents alkyl or aryl; R2 represents the atoms required to complete a hetero or carbocylic ring and A^{n-} represents an anion.

4,565,758

ELECTROPHOTOGRAPHIC PLATE HAVING A CHARGE GENERATING LAYER CONTAINING AN ORGANIC PIGMENT FOR CHARGE GENERATION

Shigeo Tachiki; Ikutoshi Shibuya, both of Hitachi; Makoto Fujikura, Matsudo, and Atsushi Kakuta, Hitachiota, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company Ltd., both of Tokyo, Japan

Continuation of Ser. No. 420,888, Sep. 21, 1982, abandoned. This application Jul. 5, 1984, Ser. No. 627,890
Claims priority, application Japan, Sep. 22, 1981, 56-150095; May 14, 1982, 57-82235
Int. Cl.[4] G03G 5/10
U.S. Cl. 430—58 18 Claims

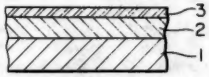
1. In an electrophotographic plate comprising an electroconductive layer, a charge generating layer containing one or more organic pigments for charge generation and a charge transport layer containing charge transport material having functions of charge maintenance and charge transport, the improvement wherein a silane coupling agent is present in the charge generating layer in an amount of 0.5 to 40% by weight based on the weight of the charge generating layer.

4,565,759

PLATES FOR USE IN LITHOGRAPHIC PRINTING

Kyoji Tsutsui, Mishima, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1984, Ser. No. 618,604
Claims priority, application Japan, Jun. 16, 1983, 58-106733
Int. Cl.[4] G03G *5/14, 13/28*
U.S. Cl. 430—66 8 Claims



1. A plate for use in lithographic printing comprising an electrically conductive substrate, a photoconductive layer on said substrate and a hydrophobic overcoat layer on said photoconductive layer, said hydrophobic overcoat layer having a thickness of from 0.05 to 10 μm and consisting essentially of the product obtained by cross-linking a resin containing at least 50 wt.% of a maleic anhydride copolymer with a polyisocyanate cross-linking agent, said hydrophobic overcoat layer being convertible to a hydrophilic overcoat layer by immersing said overcoat layer in an aqueous alkaline solution to effect hydrolysis of said copolymer.

4,565,760

PROTECTIVE OVERCOATINGS FOR PHOTORESPONSIVE IMAGING MEMBERS

Richard L. Schank, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 13, 1984, Ser. No. 670,710
Int. Cl.[4] G03G *5/14*
U.S. Cl. 430—66 14 Claims

1. A photoresponsive imaging member with acceptable residual voltages at from about 20 percent to about 80 percent relative humidities consisting essentially of inorganic or organic photoconductive substances, and as a release protective coating thereover a dispersion of colloidal silica and a hydroxylated silsesquixone in an alcoholic medium, which overcoating is of a thickness of from about 0.2 micron to about 1.5 microns.

4,565,761

ELECTROPHOTOGRAPHIC PROCESS UTILIZING AN AZULENIUM SALT-CONTAINING PHOTOSENSITIVE MEMBER

Kazuharu Katagiri; Yoshihiro Oguchi, both of Yokohama, and Yoshio Takasu, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 500,978, Jun. 3, 1983. This application Jun. 15, 1984, Ser. No. 620,821
Claims priority, application Japan, Jun. 8, 1982, 57-98047; Sep. 13, 1982, 57-160156; Sep. 13, 1982, 57-160157; Sep. 22, 1982, 57-165263; Jan. 17, 1983, 58-6070; Jan. 20, 1983, 58-7523
Int. Cl.[4] G03G *5/06*
U.S. Cl. 430—83 18 Claims

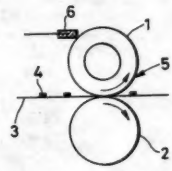
1. An electrophotographic process comprising the steps of:
(a) charging an electrophotographic photosensitive member having a conductive substrate and a photosensitive layer containing a compound having at least one nucleus of an azulenium salt with charges of a positive or negative polarity,
(b) imagewise exposing the charged photosensitive member to a pattern of light sufficient to produce an electrostatic latent image, and
(c) developing the resulting latent image with a developer.

4,565,762

APPLICATOR FOR RELEASING AGENT

Chiaki Kato, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 12, 1984, Ser. No. 649,762
Claims priority, application Japan, Sep. 30, 1983, 58-183468
Int. Cl.[4] G03G *13/20;* B05C *11/00*
U.S. Cl. 430—99 8 Claims



4. A method of applying a releasing agent to a heated fixation roller comprising the steps of:
(a) dispersing a polypropylene powder in silicone oil;
(b) heating the dispersed polypropylene powder in the silicone oil to a temperature greater than the melting point of said polypropylene powder;
(c) cooling said heated polypropylene powder to form a fine particle polypropylene powder; and
(d) applying said fine particle polypropylene powder dispersed in said silicone oil to the heated fixation roller.

4,565,763

PROCESS FOR PRODUCING TONER

Masaki Uchiyama, Tokyo, and Yasuo Mitsuhashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,293
Claims priority, application Japan, Jun. 2, 1982, 57-94496
Int. Cl.[4] G03G *11/00*
U.S. Cl. 430—109 22 Claims

1. A process for producing a toner by melt-blending at least a colorant and a polymer and finely pulverizing the resulting blend after cooling characterized in that said polymer is a crosslinked resin having a ratio of weight-average molecular weight to number-average molecular weight (Nw/Mn) exceeding 4.0 and a melt index of 0.01–10 g/10 min. at 110° C. under a load of 10 Kg, said polymer further crosslinked during the melt-blending, and the final gel content of said polymer after the melt-blending is lower than 50%.

4,565,764

MICROCAPSULE TONER AND PROCESS OF MAKING SAME

Toshiaki Nakahara; Ichiro Ohsaki, both of Kawasaki, and Hisayuki Ushiyama, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1983, Ser. No. 527,395
Claims priority, application Japan, Sep. 10, 1982, 57-158360; Sep. 13, 1982, 57-160155; Nov. 4, 1982, 57-194361
Int. Cl.[4] G03G *9/16*
U.S. Cl. 430—111 9 Claims

1. A microcapsule toner for developing electrostatic or magnetic latent images, comprising a colored solid core material containing a binder resin, a first resin wall coating said core material and a second resin wall coating said first resin wall, wherein said first and second resin walls have been prepared through phase separation, and said first resin wall has a charging characteristic to a polarity opposite to those of said core material and said second wall resin in encapsulating media for formation of said first resin wall and for formation of said second resin wall, respectively.

4,565,765

PROCESS OF DEVELOPING ELECTROSTATIC LATENT IMAGES COMPRISED OF ROTATING MAGNETS CONTAINED IN STATIONARY SHELL AND SYNTHETIC CARRIER

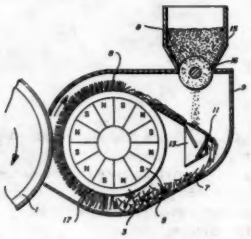
John F. Knapp, Fairport; Leon A. Howland, Williamson; Robert J. Gruber, Pittsford, and Ronald J. Koch, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 1983, Ser. No. 552,934

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.[4] G03G *13/08, 13/09*

U.S. Cl. 430—122 22 Claims



1. An improved process for developing electrostatic latent images comprising (1) providing a development zone situated between an imaging member and a transporting member, consisting essentially of a stationary shell containing rotating magnets therein, which magnets are rotating at a speed of from about 200 revolutions per minute to about 2,000 revolutions per minute, (2) transporting a synthetic developer composition comprised of toner particles and carrier particles wherein the carrier particles contain therein resin particles and magnetite particles in an amount of from about 10 percent by weight to about 60 percent by weight, into the development zone by causing rotation of the magnets in the stationary shell, (3) effecting movement of the imaging member in a direction opposite to the direction of movement of the rotating magnets, wherein the developer composition is desirably agitated in the development zone by magnetic means, and wherein developer particles are available immediately adjacent the imaging member; with the distance between the imaging member and stationary shell being from about 0.1 millimeter to about 1.5 millimeters.

4,565,766

DEVELOPING POWDER

Yasuo Mitsuhashi, Yokohama, and Masaki Uchiyama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 319,083, Nov. 6, 1981, Pat. No. 4,481,274. This application Jul. 20, 1984, Ser. No. 620,807

Claims priority, application Japan, Nov. 11, 1980, 55-158511

The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.

Int. Cl.[4] G03G *15/16*

U.S. Cl. 430—126 1 Claim

1. An electrophotographic process comprising developing a latent image on a latent image supporting member with a toner, transferring the toner image developed, and removing the toner remaining on said image supporting member, characterized in that said toner is a developing powder which comprises a binder containing 0.1–5% by weight of an olefin homopolymer or copolymer having a melt viscosity at 140° C. of $10–10^6$ cps. and containing 50% by weight or more of a crosslinked polymer, said crosslinked polymer in its entirety having a gel content of 10% or less and being prepared from a vinyl type monomer and a crosslinking agent monomer contained in an amount of 0.01–10% by weight based on the total weight of the monomers.

4,565,767

LIGHT-SENSITIVE POLYMER COMPOSITION WITH POLY(AMIC ACID), BISAZIDE, AND TERTIARY AMINE COMPOUND

Fumio Kataoka; Fusaji Shoji, both of Yokohama; Isao Obara, Kamakura; Issei Takemoto, Yokohama; Hitoshi Yokono, Katsuta; Tokio Isogai, Fujisawa, and Mitsumasa Kojima, Hitachi, all of Japan, assignors to Hitachi, Ltd and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 368,006, Apr. 13, 1982, abandoned. This application Apr. 24, 1984, Ser. No. 603,451

Claims priority, application Japan, Apr. 13, 1981, 56-54408

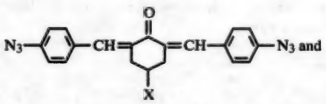
Int. Cl.[4] G03C *1/71;* G03F *7/26*

U.S. Cl. 430—196 11 Claims

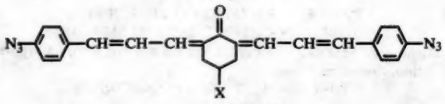
1. A light-sensitive polymer composition for forming fine patterns consisting essentially of:

(a) 100 parts by weight of a poly(amic acid),

(b) 0.1 to 100 parts by weight of at least one bisazide compound selected from the group consisting of



and



wherein X is —OH, $—R^{3'}OH$, $—OR^3$ or —COOH; R^3 is a lower alkyl group; $—R^{3'}$ is an alkylene group; and

(c) 1 to 400 parts by weight of a tertiary amine compound together in an admixture.

4,565,768

PHOTOSENSITIVE AZIDE COMPOSITION WITH ALKALI SOLUBLE POLYMER AND PROCESS OF USING TO FORM RESIST PATTERN

Saburo Nonogaki, Tokyo, and Michiaki Hashimoto, Yono, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,749

Claims priority, application Japan, Jun. 1, 1983, 58-95650

Int. Cl.[4] G03C *1/52, 1/71;* G03F *7/26*

U.S. Cl. 430—197 8 Claims

1. A photosensitive composition which comprises an admixture of a photosensitive condensation product of equimolar amounts of isophorone and an aromatic azide compound having an aldehyde group, and an alkali-soluble polymeric compound, the amount of the condensation product being 5–40% by weight on the basis of the polymeric compound.

4. A photosensitive composition which comprises an admixture of

(i) a condensation product of equimolar amounts of isophorone and at least one azide compound selected from the group consisting of an azidobenzaldehyde and an azidocinnamaldehyde; and

(ii) an alkali-soluble polymeric compound; the amount of the condensation product being 5 to 40% by weight on the basis of the polymeric compound.

8. A process for forming a pattern which comprises a step of coating a substrate with a photosensitive composition comprising (i) a photosensitive condensation product of equimolar amounts of isophorone and at least one azide compound selected from the group consisting of an azidobenzaldehyde and

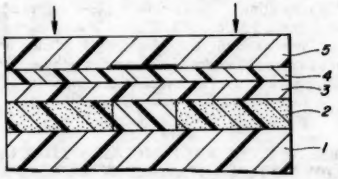
an azidocinnamaldehyde, and (ii) an alkali-soluble polymeric compound, the amount of the condensation product being 5 to 40% by weight on the basis of the polymeric compound, thereby forming a film on the substrate; a step of exposing the film to light of a predetermined pattern; and a step of developing the film with an aqueous alkali solution, thereby removing unexposed parts and forming a pattern.

4,565,769

POLYMERIC SENSITIZERS FOR PHOTOPOLYMER COMPOSITION

Thomas E. Dueber, and Bruce M. Monroe, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1984, Ser. No. 673,924
Int. Cl.[4] G03C 1/69
U.S. Cl. 430—281 11 Claims



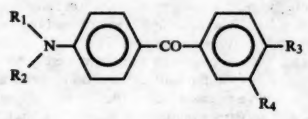
1. A photopolymerizable composition consisting essentially of

(A) at least one nongaseous ethylenically unsaturated compound having at least one terminal ethylenically unsaturated group, a boiling point above 100° C. at normal atmospheric pressure and being capable of addition polymerization;

(B) at least one 2,4,5-triarylimidazolyl dimer consisting of two lophine radicals bound together by a single covalent bond;

(C) at least one polymeric sensitizer sensitive to ultraviolet or visible radiation and having a weight average molecular weight in the range of 10,000 to 300,000, the polymeric sensitizer being the reaction product of

(1) a reactive sensitizer moiety of the formula:

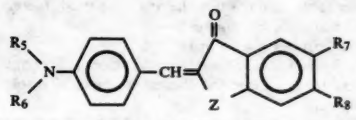

(I)

wherein R_1 is alkyl of 1 to 12 carbon atoms;

R_2 is alkyl of 1 to 12 carbon atoms, $—CH_2CH_2Cl$;

R_3 is H, and with the proviso that when R_2 is not $—CH_2CH_2Cl$, R_3 can be one of $—O(CH_2CH_2O)_n—CH_2CH_2OH$, $—O(CH_2CH_2CH_2O)_n—CH_2CH_2CH_2OH$ wherein n is 0 to 10, $—OCH_2CH_2NH_2$, $—(CH_2)_nOH$, $—(CH_2)_nNH_2$ wherein n is 1 to 12; and

R_4 is H, and with the proviso that when R_2 is not $—CH_2CH_2Cl$ and R_3 is H, R_4 is one of $—O(CH_2CH_2O)_n—CH_2CH_2OH$, $—O(CH_2CH_2CH_2O)_n—CH_2CH_2CH_2OH$ wherein n is 0 to 10, $—OCH_2CH_2NH_2$, $—(CH_2)_nOH$, $—(CH_2)_nNH_2$ wherein n is 1 to 12;


(IIa)

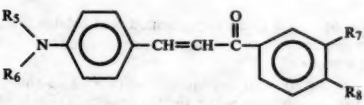
wherein Z is $—CH_2—$; $—CH_2CH_2—$; $—CH_2O—$ with oxygen bonded to the aromatic ring;

R_5 is alkyl of 1 to 12 carbon atoms;

R_6 is alkyl of 1 to 12 carbon atoms, $—CH_2CH_2Cl$;

R_7 is H, $—OCH_3$, and with the proviso that when R_6 is not $—CH_2CH_2Cl$, R_7 can be one of $—O(CH_2CH_2O)_n—CH_2CH_2OH$, $—O(CH_2CH_2CH_2O)_n—CH_2CH_2CH_2OH$ wherein n is 0 to 10, $—OCH_2CH_2NH_2$, $—(CH_2)_nOH$, $—(CH_2)_nNH_2$ wherein n is 1 to 12; and

R_8 is H, $—OCH_3$, and with the proviso that when R_6 is not $—CH_2CH_2Cl$ and R_7 is H or $—OCH_3$, R_8 is one of $—O(CH_2CH_2O)_n—CH_2CH_2OH$, $—O(CH_2CH_2CH_2O)_n—CH_2CH_2CH_2OH$ wherein n is 0 to 10, $—OCH_2CH_2NH_2$, $—(CH_2)_nOH$, $—(CH_2)_nNH_2$ wherein n is 1 to 12;


(IIb)

wherein R_5 is alkyl of 1 to 12 carbon atoms;

R_6 is alkyl of 1 to 12 carbon atoms, $—CH_2CH_2Cl$;

R_7 is H, $—OCH_3$, and with the proviso that when R_6 is not $—CH_2CH_2Cl$, R_7 can be one of $—O(CH_2CH_2O)_n—CH_2CH_2OH$, $—O(CH_2CH_2CH_2O)_n—CH_2CH_2CH_2OH$ wherein n is 0 to 10, $—OCH_2CH_2NH_2$, $—(CH_2)_nOH$, $—(CH_2)_nNH_2$ wherein n is 1 to 12; and

R_8 is H, $—OCH_3$, and with the proviso that when R_6 is not $—CH_2CH_2Cl$ and R_7 is H or $—OCH_3$, R_8 is one of $—O(CH_2CH_2O)_n—CH_2CH_2OH$, $—O(CH_2CH_2CH_2O)_n—CH_2CH_2CH_2OH$ wherein n is 0 to 10, $—OCH_2CH_2NH_2$, $—(CH_2)_nOH$, $—(CH_2)_nNH_2$ wherein n is 1 to 12; and

(2) a reactive polymer taken from the group consisting of methyl methacrylate, methyl acrylate, isocyanatoethyl methacrylate, maleic anhydride, chloromethyl styrene, p-hydroxystyrene, acrylic acid, methacrylic acid, phenol-formaldehyde resins, epoxy polymers, and mixtures of said polymers, the polymeric sensitizer having 0.1 to 70% by weight of the sensitizer moiety; and

(D) 0 to 97 parts by weight of at least one organic polymeric binder relative to 3 to 100 parts by weight of ethylenically unsaturated compound (A); component (B) being present in an amount of 0.001 to 20 parts by weight per 100 parts by weight of the combined weight of components (A) and (D); and component (C) being present in an amount of 0.1 to 80% by weight based on the total dry weight of the composition.

4,565,770

PROCESS FOR DOT ETCHING ACID SOLUBLE PHOTOPOLYMERIZABLE ELEMENTS UTILIZING CHEMICALLY SOLUBLE PIGMENTS

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1984, Ser. No. 670,949
Int. Cl.[4] G03C 5/16, 5/24, 5/38, 1/68
U.S. Cl. 430—294 22 Claims

1. A process for the preparation of a dot-etched photopolymerizable lithographic film which comprises

(A) exposing imagewise to actinic radiation a photpolymerizable element taken from the group consisting of

(i) a support bearing a layer of an acid soluble photopolymerizable composition having dispersed therein a chemically soluble pigment;

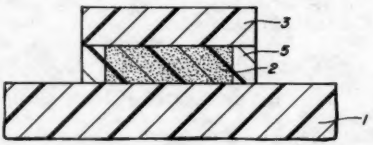
(ii) a support bearing, in order

(a) a layer of acid soluble photopolymerizable composition having dispersed therein a chemically soluble pigment,

(b) a layer of clear, unpigmented acid soluble photopolymerizable composition which is the same or different from the composition of layer (a); and

(iii) a support bearing, in order

(a) a nonphotosensitive layer of an aqueous soluble polymeric binder having dispersed therein a chemically soluble pigment,



(b) a layer of a clear, unpigmented acid soluble photopolymerizable composition comprising an acid soluble binder;

(B) developing the exposed element with an acid solution with the proviso that when the photopolymerizable element is type (iii) the acid development solution is followed by treatment with water; and

(C) treating the developed element with chemical solubilizing agent for the pigment whereby there occurs diffusion etching of the image.

17. A process according to claim 1 wherein in step (B) the water is below 25° C.

18. A process according to claim 17 wherein the chemically soluble pigment is colloidal silver which after said acid development and water treatment is bleached with ferricyanide solution and fixed with thiosulfate solution.

4,565,771

PRODUCTION OF GRAVURE PRINTING PLATES HAVING PLASTIC PRINTING LAYERS

John Lynch, Monsheim; Reinhold J. Leyrer, Ludwigshafen, and Dietrich Saenger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 22, 1983, Ser. No. 525,509

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231144

The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.

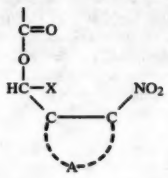
Int. Cl.[4] G03C *5/16, 1/495, 1/72*

U.S. Cl. 430—307 **20 Claims**

1. A process for the production of a gravure printing plate having a plastic printing layer applied to a printing plate base, which comprises:

(a) subjecting a solid photosensitive layer (L), which is firmly bonded to said base, to imagewise exposure to actinic light, the said photosensitive layer (L) containing as the photosensitive component, a compound possessing two or more aromatic and/or heteroaromatic o-nitrocarbinol ester groups of the formula (I)

(I)



where A is a radical of an unsubstituted or substituted 5-membered to 14-membered aromatic or heteroaromatic ring system and X is hydrogen, alkyl of 1 to 8 carbon atoms or an unsubstituted or substituted aryl or aralkyl radical, said layer (L) further containing a compound which effects cross-linking and possesses two or more reactive groups, which, under the action of heat, are capable of reacting with —COOH groups to form a covalent chemical bond; and thereafter either

(b) first washing out the imagewise exposed layer (L) with an aqueous developer, post-exposing the washed-out layer uniformly to actinic light and afterwards subjecting it to thermal hardening and cross-linking, or

(c) first subjecting the imagewise exposed layer (L) to selective thermal hardening and cross-linking in the exposed areas, post-exposing the selectively hardened and cross-linked layer (L) uniformly to actinic light and thereafter washing it out with an aqueous developer.

4,565,772

PROCESS OF USING RADIATION-SENSITIVE CARRIER BODY TO FORM STAMPER STRUCTURE AND SUBSEQUENT USE AS A STAMPER TO MAKE OPTICAL DISKS

Yoshikatsu Takeoka, Kawasaki; Nobuaki Yasuda, Zushi; Akio Hori, and Norio Ozawa, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 535,205, Sep. 23, 1983. This application Jul. 12, 1984, Ser. No. 630,232

Claims priority, application Japan, Sep. 29, 1982, 57-168623; Dec. 27, 1982, 57-226711; Dec. 27, 1982, 57-226712

Int. Cl.[4] G03C *5/00;* **B29D** *17/00;* **B29C** *43/00*

U.S. Cl. 430—320 **6 Claims**

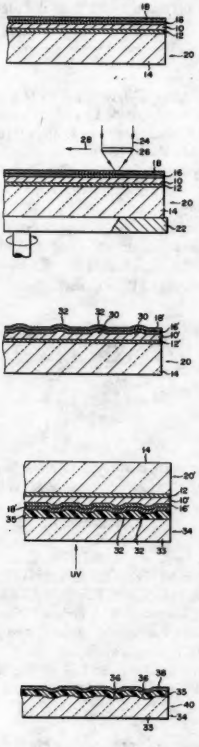
1. A method for manufacturing a stamper structure which is used to manufacture optical disks, comprising the steps of:

(a) preparing a disk-shaped carrier body which has a radiation-sensitive layer which serves as a single recording layer which absorbs energy froma beam with which said layer is irradiated and which locally expands and deforms due to discharging of a gas component contained therein, a substrate for supporting said radiation-sensitive layer, and a first adhesive layer which is interposed between said substrate and said radiation-sensitive layer and which adheres said radiation-sensitive layer to said substrate;

(b) additionally providing said carrier body with a metal layer, which has a releasability sufficient to easily separate it from a disk substrate made of a preselected material for manufacturing optical disks, and a second adhesive layer which is provided between said radiation-sensitive layer and said metal layer and which has an adhesion strength sufficient to effectively adhere said metal layer to said radiation-sensitive layer;

(c) irradiating, after said metal layer and said second adhesive layer are additionally prepared, a focussed radiation beam to form on said carrier body a spot having a diameter of the order of microns, in a manner as to cause said radiation-sensitive layer to absorb energy of the beam and deform due to the discharging of the gas component, thereby forming a protuberance in said metal layer of said carrier body; and

(d) directly using the carrier body having said protuberance as a stamper structure for manufacturing optical disks



each of which comprises a substrate in a surface of which a groove corresponding in shape to the protubuerance is formed.

4,565,773

DRY NONELECTROSCOPIC TONERS SURFACE COATED WITH NONIONIC SILOXANE-OXYALKYLENE BLOCK COPOLYMER

Howard Matrick, Highlands, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1983, Ser. No. 554,330

Int. Cl.⁴ G03C 5/04

U.S. Cl. 430—331 **8 Claims**

1. A dry nonelectroscopic toner consisting essentially of pigmented organic resin particles having a size distribution within the range of 0.2 to 30 micrometers and not more than 50 percent of the particles being less than one micrometer particle size, the improvement whereby the pigmented particles are surface coated with a nonionic black copolymer compound which is liquid above 10° C., present as a single phase, and having a viscosity of less than 1000 cps and a hydrophile-lipophile balance in the range of 7 to 15 taken from the group consisting of

(A) A mixture of block copolymers wherein each copolymer contains a siloxane polymer and at least one oxyalkylene polymer in combination, the siloxane polymer being composed of at least one trifunctional silicon atom, bonded to three oxygen atoms and a single monovalent hydrocarbon radical, and joined to at least three difunctional silicon atoms through oxysilicon bonds, each of said difunctional silicon atoms having two monovalent hydrocarbon radicals bonded thereto and the oxyalkylene polymer being composed of at least two oxyalkylene groups bonded to each other by oxycarbon bonds and bonded at one end to the siloxane polymer through a carbon-oxy-silicon bond and bonded at the other end to a monoether radical,

(B) a block copolymer composed of (1) at least one siloxane unit represented by the formula:

$$R_bSiO_{4-b/2}$$

wherein R contains from one to about twenty-two carbon atoms inclusive and is selected from the class consisting of monovalent hydrocarbon groups and divalent hydrocarbon groups and b has a value from 1 to 3 inclusive, said siloxane block containing at least one of said siloxane units wherrein at least one R group is a divalent hydrocarbon group, and (2) at least one oxyalkylene block containing at least two oxyalkylene groups represented by the formula: —R′O—, wherein R′ is an alkylene group containing from two to about ten carbon atoms inclusive, said siloxane and oxyalkylene blocks being interconnected by said divalent hydrocarbon group, and

(C) mixtures of said block copolymers.

4,565,774

METHOD FOR THE FORMATION OF DYE IMAGE

Makoto Kajiwara, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 443,237, Nov. 22, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,264

Claims priority, application Japan, Dec. 1, 1981, 55-193443

Int. Cl.⁴ G03C 7/16

U.S. Cl. 430—382 **11 Claims**

1. A method for forming a dye image comprising imagewise exposing and developing a silver halide light-sensitive color photographic material having a support and coated thereon at least one silver halide emulsion layer, each of said layers containing at least 80 mole % silver chloride, said developing taking place in a developer essentially free from bromide ion and having a pH value of at least 9.5, in the presence of a p-phenylenediamine color-developing agent and a compound of the formula

having an acid dissociation constant of not more than 1×10^{-8} and a solubility produce with silver ion of not more than 1×10^{-10}, wherein Z, together with N, forms a heterocyclic ring.

4,565,775

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES BY THE SILVER DYE BLEACH PROCESS

Eddy Forte, Pully, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 9, 1985, Ser. No. 689,755

Claims priority, application Switzerland, Jan. 20, 1984, 250/84; Oct. 8, 1984, 4813/84

Int. Cl.⁴ G03C 7/32

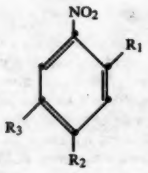
U.S. Cl. 430—390 **9 Claims**

1. A process for the production of photographic images by the silver dye bleach process by exposure, development, dye and silver bleach, and fixing of a photographic material which, on a base, contains at least one photographic element comprising a silver halide-free gelatin layer, which contains a diffu-

sion-resistant bleachable image dye, and a silver halide emulsion layer which is arranged directly on top of the former layer on the side facing the light source and is free of image dye, wherein

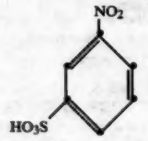
(a) the gelatin layer containing the image dye has a gelatin/dye ratio of at most 10:1,

(b) the oxidising agent used in the dye and silver bleach is of the formula



(1)

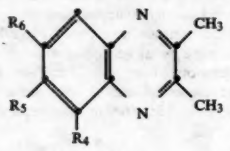
or



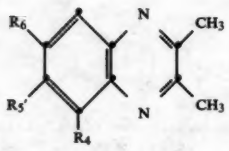
(1b)

in which R_1 is hydrogen, alkyl having 1 to 4 carbon atoms, amino or —SO_3H, R_2 is hydrogen, amino or hydroxyl and R_3 is hydrogen, nitro or —SO_3H, R_3 being other than —SO_3H if R_1 and R_2 are hydrogen, and

(c) the bleach catalyst used in the dye and silver bleach is of the formula

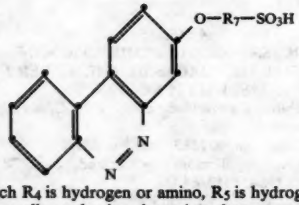


(2a)



(2b)

or



(3)

in which R_4 is hydrogen or amino, R_5 is hydrogen, hydroxyl, alkyl or alkoxy having 1 to 4 carbon atoms or —O—R-7—SO_3H or —O—R_7—OH, R_5' is as defined for R_5 with the exception of hydrogen and —O—R_7—SO_3H, and R_5' is not methyl or methoxy if R_4 and R_6 are hydrogen, R_6 is hydrogen or alkyl or alkoxy each having 1 to 4 carbon atoms and R_7 is alkylene having 1 to 4 carbon atoms, those oxidising agents in which R_2 is hydroxyl being used only in conjunction with at least tetrasubstituted quinoxalines, those oxidising agents in which R_2 is amino being used only in conjunction with at most trisubstituted quinoxalines, and the oxidising agent of the formula (1b) being used only with bleach catalysts of the formula (2b).

4,565,776

PHOTOGRAPHIC DEVELOPER COMPOSITION

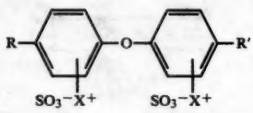
Hongzoon Kim, Boonton, N.J., and Thomas E. Salamy, North Kingstown, R.I., assignors to Philip A. Hunt Chemical Corporation, Palisades Park, N.J.

Filed Apr. 29, 1985, Ser. No. 728,557

Int. Cl.[4] G03C *5/30*

U.S. Cl. 430—467 **20 Claims**

1. A photographic color developer composition comprising, (1) a primary aromatic amino color developing agent and, (2) an oxidation inhibiting amount of an alkylated diphenyl oxide disulfonate represented by the formula:



where R is a linear or branched alkyl group of between about 8 and about 20 carbon atoms, where R^1 is R or hydrogen, and where X is an alkali metal or hydrogen.

4,565,777

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Akira Ogawa; Kozo Aoki; Osami Tanabe, and Makoto Umemoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

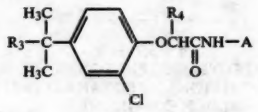
Filed Jul. 20, 1984, Ser. No. 632,735

Claims priority, application Japan, Jul. 21, 1983, 58-133293

Int. Cl.[4] G03C *7/32*

U.S. Cl. 430—552 **9 Claims**

1. A silver halide color photographic light-sensitive material comprising a coupler represented by formula (II):



(II)

wherein A represents the residue of a coupler, R_3 represents an alkyl group having from 1 to 7 carbon atoms, R_4 represents an alkyl group having from 4 to 16 carbon atoms, with the total number of carbon atoms of R_3 and R_4 being from 8 to 22.

4,565,778

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Akihiko Miyamoto; Hideki Takiguchi; Shoji Matsuzaka; Hiroshi Kashiwagi, and Yoshiyuki Nonaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,635

Claims priority, application Japan, Mar. 31, 1983, 58-57649; Apr. 7, 1983, 58-61874; Apr. 15, 1983, 58-67181

Int. Cl.[4] G03C *1/28, 1/34*

U.S. Cl. 430—567 **28 Claims**

1. A silver halide photographic material having at least one silver halide emulsion layer on a support characterized in that an emulsion of said emulsion layer substantially contains core/-shell silver halide grains, the core portion of said grain contain-

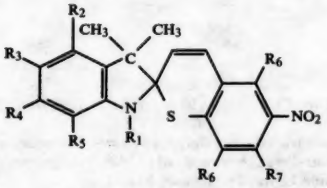
ing silver iodide in a greater amount than the shell portion of said grain, and said emulsion has been subjected to chemical ripening in the presence of a labile selenium compound sensitizer.

4,565,779
PHOTOCHROMIC COMPOUNDS AND PHOTOSENSITIVE COMPOSITIONS CONTAINING THE COMPOUNDS

Seiichi Arakawa, Chigasaki; Hirofumi Kondo, and Junetsu Seto, both of Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1983, Ser. No. 565,201
Claims priority, application Japan, Dec. 28, 1982, 57-233036
Int. Cl.[4] G03C *1/52, 1/733*
U.S. Cl. 430—962 **4 Claims**

1. A photosensitive composition comprising 3 to 50 wt. % of a photochromic compound of the general formula



in which R_1 represents an alkyl group having 1 to 20 carbon atoms, R_2, R_3, R_4 and R_5 independently represent an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom, a nitro group, a cyano group or a dimethylamino group, and R_6, R_7 and R_8 independently represent a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, or a halogen atom, and correspondingly 97 to 50 wt. % of a film-forming polymer.

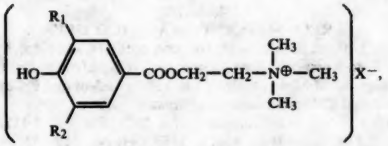
4,565,780
METHOD FOR DETERMINATION OF CHOLINESTERASE ACTIVITY

Hideo Motonaga, and Masahiro Naito, both of Kanagawa, Japan, assignors to Shino-Test Laboratory Co., Ltd., Tokyo, Japan

PCT No. PCT/JP81/00405, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982, PCT Pub. No. WO82/02212, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 23, 1981, Ser. No. 395,029
Claims priority, application Japan, Dec. 25, 1980, 55-182910
Int. Cl.[4] C12Q *1/46, 1/26*
U.S. Cl. 435—20 **11 Claims**

1. The method for determination of cholinesterase activity by measuring the extinction decrease or the oxygen consumption, comprising the following steps:

(a) Subjecting a substrate having the formula:



wherein R_1 and R_2 represent a hydrogen atom or one or both of R_1 and R_2 represent a lower-alkoxy group with 1 through 4 carbon atoms, and X represents a halogen atom, to hydrolysis by the action of cholinesterase to produce a p-hydroxybenzoic acid,

(b) reacting the p-hydroxybenzoic acid thus-produced with p-hydroxybenzoic acid hydroxylase in the presence of the coenzyme nicotinamide adenine dinucleotide phosphate in reduced form (NADPH), whereby the NADPH is oxidized to nicotinamide adenine dinucleotide phosphate (NADP), and

(c) measuring the extent of extinction decrease or oxygen consumption in the reaction mixture produced by conversion of the nicotinamide-adenine-dinucleotide phosphate in reduced form (NADPH) to the oxidized form (NADP).

4,565,781
ANTIBIOTIC, SPICAMYCIN

Noboru Otake, Yokohama; Yoichi Hayakawa, Tokyo; Hiroyuki Kawai, Urawa; Masaya Nakagawa, Ichikawa; Kozo Tanabe, and Junichiro Mochizuki, both of Takasaki, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1984, Ser. No. 583,108
Claims priority, application Japan, Mar. 4, 1983, 58-35662
Int. Cl.[4] C12P *19/40, 19/28*; C07H *17/02, 19/06*
U.S. Cl. 435—88 **2 Claims**

1. A antibiotic, Spicamycin, having the following physicochemical properties:

(a) Color and properties: Weakly acidic white powder

(b) Melting point: 215° to 220° C. (decomposed)

(c) Specific rotatory power: $[\alpha]_D^{25} = +15°$ (C: 0.15, in methanol)

(d) Elementary analysis (Found): C: 57.4%, H: 8.38%; N: 15.7%, O: 18.6%

(e) Ultraviolet absorption spectrum (maximum):

CH_3OH	264 nm ($E_{1cm}^{1\%}$ 257)
0.01N NaOH = CH_3OH	272 nm ($E_{cm}^{1\%}$ 226)
0.01N HCl + CH_3OH	273 nm ($E_{cm}^{1\%}$ 258)

(f) Infrared absorption spectrum (as measured by the potassium bromide method): As shown in FIG. 2,

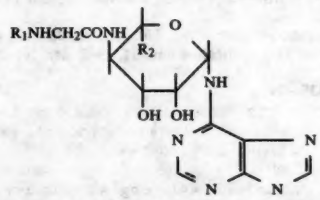
(g) Solubility in solvent: Soluble in basic water, dimethyl sulfoxide, methanol, ethanol, n-propanol, an n-butanol Sparingly soluble in water, acetone, ethyl acetate, and chloroform, Insoluble in benzene, ethyl ether, and hexane

(h) Thin layer chromatography (using "Silica Gel $60F_{254}$" plate supplied by Merck & Co., Inc.):

Developing solvent	Rf value
Chloroform:Methanol (1:1)	0.34

(i) NMR spectrum (400 MHz, in deuteromethanol): As shown in FIG. 3,

(j) Chemical formula:



wherein R_1 is $(CH_3)_2CH(CH_2)_nCO$ wherein n is 8–14, or $CH_3(CH_2)_mCO$ wherein m is 10–16, and R_2 is $CH_2(OH)CH(OH)$.

4,565,782

PROCESS FOR PRODUCING OPTICALLY ACTIVE ARYLOXYPROPIONIC ACIDS AND DERIVATIVES THEREOF USEFUL AS HERBICIDES

David W. Bewick, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England

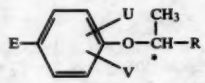
Filed Jul. 26, 1984, Ser. No. 634,491

Claims priority, application United Kingdom, Jul. 27, 1983, 8320222; Nov. 1, 1983, 8329086

Int. Cl.[4] C12P *17/12*; C07P *41/00*

U.S. Cl. 435—122 **13 Claims**

1. A process for the stereospecific inversion of the enantiomer of an α-aryloxypropionic acid of formula I:

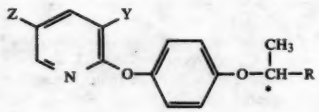


(I)

wherein E is OR^1 or

R^1 is an unsubstituted or substituted aryl or heterocyclic ring system, and R^2 is hydrogen or methyl, U and V each independently represent hydrogen or halogen and R is a carboxyl group, or an enzymic and herbicidal equivalent thereof, in a mixture with its [R] enantiomer, which process comprises contacting said [S] enantiomer with a stereospecific inverting enzyme so as to convert the [S] enantiomer to the corresponding [R] enantiomer without substantially affecting the [R] enantiomer in said mixture.

7. A process according to claim 1 wherein the α-aryloxypropionic acid is of formula II



(II)

wherein Z and Y each represent fluorine, chlorine, bromine, iodine or hydrogen or a trifluoromethyl, difluoromethyl or chlorodifluoromethyl group provided that at least one of Z and Y is a halogenomethyl group and R represents a carboxyl group.

4,565,783

DRY CULTURE MEDIA

Paul E. Hansen, and Robert L. Nelson, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 228,893, Jan. 27, 1981, abandoned. This application Jan. 11, 1982, Ser. No. 338,559

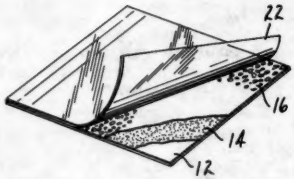
Int. Cl.[4] C12M *1/16*; C12Q *1/24*

U.S. Cl. 435—299 **33 Claims**

1. A device for growing microorganisms, comprising:

a body member comprising a self-supporting, waterproof substrate having upper and lower surfaces;

a layer of adhesive-coated on said upper surface of said substrate, said adhesive being non-inhibitory to the growth of microorganisms; and a cold-water-soluble powder adhered uniformly to said adhesive, said powder comprising at least one ingredient selected from the group consisting of a gelling agent, one or more nutrients for growing microorganisms, and a mixture thereof;



said device being free of matrixes which adversely affect visualization and isolation of bacterial colonies.

4,565,784

HYDROGELS CAPABLE OF SUPPORTING CELL GROWTH

Carl Franzblau, Newton; Barbara A. Faris, Squantum, and Linda Civerchia-Perez, Norwood, all of Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 228,133, Jan. 26, 1981, abandoned. This application Dec. 7, 1983, Ser. No. 558,977

Int. Cl.[4] C12N *5/00*; C12R *1/91*

U.S. Cl. 435—240 **3 Claims**

1. A method of growing anchorage-dependent cells, comprising:

a. forming an aqueous solution containing:

(1) a hydrophilic monomer in an amount which will, upon polymerization and crosslinking, produce a three-dimensional polymer network sufficient to gel said aqueous solution thereby forming a hydrogel; and

(2) a macromolecule capable of supporting cell growth, said macromolecule being present in an amount sufficient to support cell growth on said hydrogel;

b. polymerizing and crosslinking said hydrophilic monomer to thereby form a hydrogel which spports cell growth;

c. introducing said hydrogel into a vessel as a substrate therein for attachment of said anchorage-dependent cells;

d. adding cell culture medium to said vessel;

inoculating anchorage-dependent cells into said vessel to form a cell culture therein; and

f. maintaining said cell culture under conditions conducive to cell attachment and growth.

4,565,785

RECOMBINANT DNA MOLECULE

Walter Gilbert; Stephanie A. Broome, both of Cambridge; Lydia J. Villa-Komaroff, Boston, and Argiris A. Efstratiadis, Cambridge, all of Mass., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

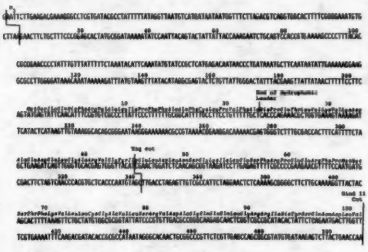
Division of Ser. No. 913,533, Jun. 8, 1978, Pat. No. 4,411,994. This application Aug. 1, 1983, Ser. No. 519,303

Int. Cl.[4] C12N *1/00, 15/00, 9/86*; C07H *15/12*

U.S. Cl. 435—317 **4 Claims**

1. A recombinant DNA molecule comprising a bacterial gene for an extracellular or periplasmic carrier protein and a

non-bacterial gene which codes for a selected protein or polypeptide, said non-bacterial gene having been inserted into said



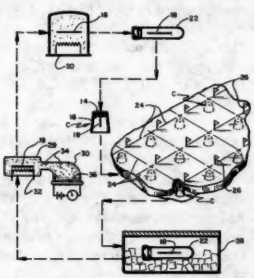
bacterial gene and joined end to end with a portion thereof so as to maintain constant the proper reading frame in both genes.

4,565,786

METHOD FOR DETECTING MERCURY GAS

John A. Dunkhase, Golden; Ronald W. Klusman, Evergreen, and James C. Fisher, Golden, all of Colo., assignors to Earth Search, Inc., Golden, Colo.

Filed Apr. 11, 1984, Ser. No. 599,147
Int. Cl.[4] G01N *1/22, 33/20, 33/24*
U.S. Cl. 436—26 **4 Claims**



1. A method of detecting mercury gas emanating from a subsurface ore body containing precious metal or sulfides, said method comprising the steps of:

heating lengths of silver wire to a sufficient temperature for a sufficient length of time to clean them and to render them mercury free;

attaching one end of each wire to the inside of a removable vial cap;

attaching each cap to the top of a vial with the wire suspended from the cap therein;

transporting the silver wires in the vials to a test area;

removing each cap and attached wire from each vial and attaching the outside of each cap to the inside bottom of an inverted plastic cup without touching the wire so that the wire is suspended by each cap inside of each cup;

burying a plurality of the cups to which a cap and wire has been attached to each in the ground in a predetermined array over an area suspected to contain the ore body;

leaving said array of cups in the earth for a predetermined period of time to allow the silver wires to adsorb mercury-vapor emitted from the ore body;

locating each cup in the array and removing it from the earth;

removing the cap with attached silver wire from each cup after the cup is removed from the earth without touching the wire;

reattaching each cap to each vial with a silver wire still suspended from each cap to form an airtight enclosure for each silver wire;

refrigerating each vial and silver wire so that any mercury adsorbed on the silver wires will remain therein;

storing each vial and wire at refrigerated temperature prior to determining the amount of mercury adsorbed in each wire; said

subsequently removing each wire from its refrigerated vial and heating it to vaporize the mercury from it; and

measuring the amount of mercury removed from each wire.

4,565,787

HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC) ANALYSIS OF SULFUR MUSTARDS AND THEIR DECOMPOSITION BY-PRODUCTS BY DERIVATIZATION

Paul C. Bossle, Baltimore; John J. Martin, Joppa; Emory W. Sarver, and Harold Z. Sommer, both of Havre de Grace, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1983, Ser. No. 492,862
Int. Cl.[4] G01N *33/00; C07C 143/78*
U.S. Cl. 436—120 **10 Claims**

1. A method for the simultaneous detection, separation, and analysis of a mixture of non-chromophoric aliphatic sulfides, which comprises:

reacting a mixture of said aliphatic sulfides of the formula $R^1—S—R^2$, wherein R^1 and R^2 are alkyl radicals, which may or may not contain substituents and may be the same or different, with an alkali metal arylsulfochloramide of the formula aryl-SO_2NMeCl, wherein Me is an alkali metal, to produce a mixture of corresponding ultraviolet fluorescent arylsulfonylsulfilimine compounds according the the following equation:

$$\text{aryl-SO}_2\text{NMeCl} + \text{R}^1\text{S—R}^2 \longrightarrow \text{aryl-SO}_2\text{N=}\underset{\displaystyle \text{R}^2}{\overset{\displaystyle \text{R}^1}{\text{S}}} + \text{MeCl}$$

wherein Me, R^1 and R^2 have the aforesaid definitions;

separating the mixture of arylsulfonylsulfilimine compounds into the individual compounds by high pressure liquid chromatography (HPLC) and

fluorescing the individual arylsulfonylsulfilimines by ultraviolet radiation.

4,565,788

METHOD OF DETERMINING HEAT LOSSES DUE TO INCOMPLETE FUEL COMBUSTION

Boris A. Milovidov, ulitsa Kalinina, 143, kv. 25, Pavlodar, U.S.S.R.; Iosif B. Kaplunov, deceased, late of Moscow, U.S.S.R., and by Nadezhda V. Kaplunova, administratrix, Simonovsky val, 22 korpus 2, kv. 155, Moscow, U.S.S.R.

Division of Ser. No. 468,982, Feb. 23, 1983, Pat. No. 4,481,168.
This application Jun. 26, 1984, Ser. No. 624,780
Int. Cl.[4] G01N *31/12, 25/22, 25/00*
U.S. Cl. 436—137 **1 Claim**

1. A method of determining heat losses due to incomplete fuel combustion, which comprises:

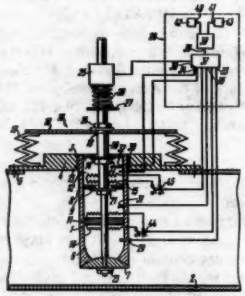
periodically taking a sample of fuel combustion products, said sample including solid and gaseous phases;

separating the sample into two parts, one of which includes a solid and a gaseous phase; and the other, a gaseous phase;

determinng an oxygen concentration C_1 in each of said parts of said sample;

heating said parts of said sample to the temperature of ignition of combustible material remaining in said parts to assist burning, while maintaining the volume of said parts at a constant level;

determining an oxygen concentration C_2 after said heating in the part of the sample containing only said gaseous phase;
determining an oxygen concentration C_3 after said heating in the part of the sample containing said solid and said gaseous phases;
determining an oxygen loss Δ_1 in the part of said sample containing said gaseous phase as the difference of said concentrations C_1 and C_2;
determining an oxygen loss Δ_2 in the part of said sample containing said solid and said gaseous phases as the difference of said concentrations C_1 and C_3;
determining an oxygen loss Δ_3 in an initial oxidizer in the event of complete combustion of fuel as the difference of an initial oxygen concentration C_0 and said concentration C_3;



determining heat losses due to chemical underburning of fuel as the ratio between said oxygen loss Δ_1 and said oxygen loss Δ_3, multiplied by a first coefficient predetermined from the ratio of the volume of the part of the sample having the gas/solid phases and total volume of the sample;
determining heat losses due to chemical and mechanical underburning of fuel as the ratio between the oxygen loss Δ_2 and the oxygen loss Δ_3, multiplied by a second coefficient predetermined from the ratio of the volume of the part of the sample having the gas/solid phases and total volume of the sample; and
determining heat losses due to mechanical underburning of the fuel as the difference of said heat losses due to said chemical and said mechanical underburning of fuel, and said heat losses due to said chemical underburning of fuel.

4,565,789
CELL MATRIX RECEPTOR SYSTEM AND USE IN CANCER DIAGNOSIS AND MANAGEMENT

Lance A. Liotta, Bethesda, Md.; Nageswara C. Rao, Visiting Fellow, India, and Victor Terranova, Gaithersburg, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 4, 1983, Ser. No. 481,934
Int. Cl.[4] G01N *33/566, 33/50, 33/534, 33/567*
U.S. Cl. 436—504 **26 Claims**

1. An isolated receptor having specific binding affinity for laminin.

3. A method for evaluating the effectiveness of a chemotherapeutic agent for treating cancer cells expressing the receptor of claim 1, comprising interacting a conjugate of the agent and a ligand specific for said receptor with a population of carcinoma cells prior and after chemotherapy.

4. A laminin fragment having a binding domain for the receptor of claim 1 without having a binding domain for type IV collagen.

6. A method for inhibiting attachment to type IV collagen of cells having the receptor of claim 1 comprising blocking the receptor site of said cells with a laminin, a laminin fragment having a binding domain for the cell receptor without having a binding domain for type IV collagen, a ligand having specificity against said receptor, or an analogue thereof.

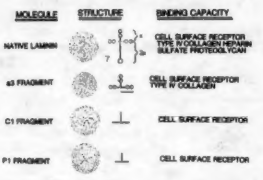


FIG. 1. STRUCTURAL AND FUNCTIONAL PROPERTIES OF LAMININ AND ITS FRAGMENTS. CIRCLES REPRESENT GLOBULAR END REGIONS. REPRESENTATIVE ELECTRON MICROGRAPHS OF LAMININ OR PURIFIED FRAGMENTS ARE SHOWN.

8. A method for separating metastatic cancer cells expressing the cell receptor of claim 1 from a mixed population of cells comprising binding the metastatic cancer cells to a ligand having a binding domain for the cell receptor, and separating bound from unbound cells.

4,565,790
METHOD FOR FLUORESCENCE SPECTROSCOPIC DETERMINATION OF A BIOLOGICALLY ACTIVE SUBSTANCE

Ilkka Hemmilä , Turku, Finland, and Salifu Dakubu, London, United Kingdom, assignors to WALLAC Oy, Turku, Finland

Continuation-in-part of Ser. No. 368,274, Apr. 14, 1982, abandoned. This application Jul. 14, 1983, Ser. No. 513,744
Claims priority, application Sweden, Apr. 30, 1981, 8102753
Int. Cl.[4] G01N *33/536, 33/533*
U.S. Cl. 436—537 **10 Claims**

1. In a method for fluorescence spectroscopic determination of a biological substance provided with a marker consisting of a lanthanide chelate complex formed of a lanthanide coupled to the substance via a chelate forming compound, by excitation by a short radiation pulse, and detection of the fluorescence of the marker when the fluorescence from any noise source has substantially ceased, wherein the improvement comprises, adding, before the determination, a solution that brings the pH to 3.5 or below and contains a detergent and a β-diketone to dissociate the lanthanide ion from the chelate complex and to transfer the dissociated lanthanide ion into a fluorescent form to enable the determination in the solution.

4,565,791
GLASSES FOR OPHTHALMIC APPLICATIONS

Jean E. Boudot, and Jean P. Mazeau, both of Avon, France, assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 12, 1984, Ser. No. 630,094
Claims priority, application France, Jan. 13, 1984, 84 00481
Int. Cl.[4] C03C *3/11, 3/091, 3/093, 4/00*
U.S. Cl. 501—56 **4 Claims**

1. A glass for ophthalmic applications having a refractive index of 1.523 ± 0.004, Abbe number between 51–59, a density less than 2.43 g/cm^3, a transmission at 400 nm in 2 mm thickness greater than 89%, and a UV cutoff between about 325–335 nm characterized in that it is prepared from a batch composition consisting essentially, in weight percent on the oxide basis, of :

SiO_2	54–70	$Li_2O + Na_2O + K_2O$	10–13
B_2O_3	9–22	TiO_2	4–6
Al_2O_3	3–10	ZrO_2	0–2
Li_2O	0.5–3	As_2O_3	0.10–0.50
Na_2O	3–9	Cl	0.2–0.7
K_2O	3–10		

4,565,792

PARTIALLY STABILIZED ZIRCONIA BODIES

Christopher E. Knapp, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 506,239, Jun. 20, 1983, abandoned. This application Jun. 15, 1984, Ser. No. 621,017
Int. Cl.[4] C04B *35/48*
U.S. Cl. 501—104 7 Claims

1. A crystalline sintered stabilized zirconia body made from a powder, said powder consisting essentially of a cofusion of zirconia and from 2.6% to 10% of a stabilizing metal oxide, the crystals in said body having a size of 10 microns or less.

4,565,793

COMPOSITE ZEOLITIC MAGNETIC MATERIAL

Ronald E. Rosensweig, Summit, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 192,228, Sep. 30, 1980, abandoned, which is a division of Ser. No. 935,566, Aug. 21, 1978, Pat. No. 4,296,080, which is a division of Ser. No. 786,613, Apr. 11, 1977, Pat. No. 4,115,927, which is a continuation-in-part of Ser. No. 610,071, Sep. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 514,003, Oct. 11, 1974, abandoned. This application Oct. 28, 1982, Ser. No. 437,408
Int. Cl.[4] B01J *29/06*; C01G *49/08*
U.S. Cl. 502—74 10 Claims

1. A solid particulate magnetizable, fluidizable composite particle having a particle size ranging from about 0.001 mm to 50 mm which comprises 2–40 volume percent of ferro- or ferrimagnetic material with the balance of the composite being a non-magnetic material containing zeolite, said ferro- or ferrimagnetic material being dispersed in said non-magnetic material.

6. The composite of claim 1 wherein the ferro- or ferrimagnetic material has a low or zero coercivity.

7. The composite of claim 1 wherein the ferro- or ferrimagnetic material is selected from the group consisting of magnetic Fe_3O_4, γ-iron oxide (Fe_2O_3), ferrites of the form $XO{\cdot}Fe_2O_3$ wherein X is a metal or mixture of metals selected from the group consisting of Zn, Mn and Cu, iron, nickel, cobalt, gadolinium and mixtures thereof.

4,565,794

PRODUCTION OF SILICA GEL AND AN ADSORBENT, ABSORBENT PRODUCT FROM SERICITIC CLAY

Francis de Buda, Santa Barbara, Calif., assignor to John Stephens, Santa Barbara, Calif.

Filed Dec. 16, 1983, Ser. No. 562,426
Int. Cl.[4] B01J *20/12, 20/10*
U.S. Cl. 502—83 9 Claims

1. A process for treating sericitic clay particles so as to produce silica gel and an adsorbent, absorbent product which comprises:

removing silica from said particles by digesting said particles with an alkali solution under such conditions that the alkali and the silica react to form a soluble alkali silicate process solution,

separating said process solution from the particles remaining after the digestion of said clay particles,

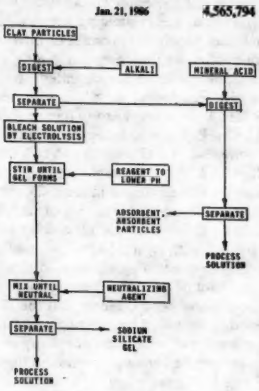
bleaching said process solution so as to remove discoloration from said process solution,

forming an alkali silicate gel from the bleached process solution by adding a gel forming reagent to it,

separating the gel from the solution within which it is formed,

drying the resultant gel,

removing alumina from the particles remaining after the removal of silica by digesting them with a mineral acid under such conditions that the acid and the alumina react to form a salt of the acid which dissolves in the solution present,



separating and drying the particles remaining after this second digestion.

4,565,795

POLYMERIZATION AND CATALYSTS

James N. Short, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 7, 1979, Ser. No. 101,375
Int. Cl.[4] C08F *4/02, 4/64*
U.S. Cl. 502—110 19 Claims

7. A method of producing a polymerization catalyst which comprises;

(1) pretreating a particulate silica-containing support containing at least 80 wt. % silica by reacting same with at least one of a chlorinating compound, a lower alkanol, a silating compound, a carboxylic acid chloride and an organoboron compound under conditions such that at least a portion of the OH groups on the support are reacted with the treating agent and thereby provide an activating amount of treating agent into the support,

(2) contacting the pretreated silica of (1) with an organomagnesium compound of the formula MgR_2 wherein R is a hydrocarbon radical having from 1 to about 12, inclusive, carbon atoms,

(3) treating the product obtained in (2) with a halogenated tetravalent titanium compound of the formula $TiX_n(OR')_{4-n}$ in which X is bromine, chlorine, or iodine, R' is a hydrocarbon radical selected from saturated aliphatic, saturated cycloaliphatic and aromatic groups containing from 1 to about 12, inclusive, carbon atoms, and n is an integer of 3 or 4,

(4) isolating and purifying the product obtained in (3), and

(5) combining the purified product of (4) with a cocatalyst comprising a metallic hydride or organometal compound wherein said metal is selected from a metal of Groups IA, IIA and IIIA of the Periodic Table.

4,565,796

POLYMERIZATION CATALYST, PRODUCTION AND USE

Bradley P. Etherton, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 6, 1984, Ser. No. 638,320
Int. Cl.[4] C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—112 40 Claims

1. A transition metal containing catalyst component comprising the solid reaction produce obtained by treating an inert

solid support material in an inert solvent sequentially with (A) an organometallic compound of a Group IIa, IIb or IIIa metal wherein all the metal valencies are satisfied with a hydrocarbon group, (B) an oxygen containing compound selected from ketones, aldehydes, alcohols, siloxanes or mixtures thereof, (C) optionally one of more halogen containing compounds selected from chlorosilanes represented by the formula $R_b{}^9SiX''_{(4-b)}$ wherein $0<b<4$, X'' is chlorine, bromine or iodine and R^9 is a hydrocarbyl group having from 1–18 carbon atoms and/or Cl_2, Br_2 or interhalogens, (D) at least one transition metal compound of a Group IVb, Vb, VIb or VIII metal, (E) optionally Cl_2, Br_2 or an interhalogen with the proviso that if a chlorosilane is not employed in step (C), then a Cl_2, Br_2 or interhalogen is employed in at least one of steps (C) or (E), and with the further proviso that the inert solid support material can also be treated with (i) the (A) organometallic compound and the (B) oxygen containing compound simultaneously, (ii) the reaction product of the (A) organometallic compound and (B) oxygen containing compound or (iii) the (B) oxygen containing compound followed by treating with the (A) organometallic compound, the mole ratio of the organometallic compound to the oxygen containing compound being in the range of about 0.5 to 1.5.

4,565,797

POLYMERIZATION CATALYST, PRODUCTION AND USE (P-1010)

Bradley P. Etherton, Houston, and Malcolm J. Kaus, Humble, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 3, 1984, Ser. No. 637,641
Int. Cl.[4] C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—116 **46 Claims**

1. A transition metal containing catalyst component comprising the solid reaction product obtained by treating an inert solid support material in an inert solvent sequentially with (A) an organometallic compound of a Group IIa, IIb or IIIa metal wherein all the metal valencies are satisfied with a hydrocarbon group, (B) an oxygen containing compound selected from ketones, aldehydes, alcohols, siloxanes or mixtures thereof, (C) optionally one or more halogen containing compounds selected from chlorosilanes and/or Cl_2, Br_2 or interhalogens, (D) at least one transition metal compound of a Group IVb, Vb, VIb or VIII metal, (E) optionally Cl_2, Br_2 or an interhalogen, and (F) treating the transition metal containing component with an organometallic compound of a Group IIa, IIb or IIIa metal, with the proviso that if a chlorosilane is not employed in step (C), then Cl_2, Br_2 or an interhalogen is employed in at least one of steps (C) or (E), if a chlorosilane is employed in step (C), then Cl_2, Br_2 or an interhalogen is additionally employed in step (C) and/or step (E), and with the further proviso that the inert solid support material can also be treated with (i) the (A) organometallic compound and the (B) oxygen containing compound simultaneously, (ii) the reaction product of the (A) organometallic compound and (B) oxygen containing compound or (iii) the (B) oxygen containing compound followed by treating with the (A) organometallic compound.

4,565,798

PROCESS FOR POLYMERIZATION OF OLEFINS

Tadashi Yamamoto; Hiroyuki Furuhashi; Masafumi Imai; Hiroshi Ueno, and Naomi Inaba, all of Saitama, Japan, assignors to TOA Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1984, Ser. No. 672,780
Claims priority, application Japan, Nov. 29, 1983, 58-223247
Int. Cl.[4] C08F *4/64*
U.S. Cl. 502—119 **11 Claims**

1. A catalyst for polymerizing olefins, said catalyst composed of

(A) a titanium-containing catalyst component obtained by contacting with one another,

(a) a magnesium dialkoxide,

(b) a silane having at least one hydrogen-silicon bond, and

(c) an electron donor compound, and

(d) a titanium compound,

(B) an organic compound of a metal of Groups I and III of the Periodic Table, and

(C) an organo silicon compound represented by the formula $R_pSiX_m(OR')_n$ wherein R and R' are the same or different C_{1-20} hydrocarbon groups, X is a halogen atom, $0 \leqq p < 4$, $0 \leqq m < 4$, $0 < n \leqq 4$, and $p+m+n=4$.

2. The catalyst of claim 1 wherein the magnesium alkoxide and the silicon compound having the hydrogen-silicon bond are reacted together prior to contact with the electron donor and the titanium compound.

3. The catalyst of claim 2 wherein the silicon compound having the hydrogen-silicon bond is trichlorosilane and the magnesium dialkoxide is magnesium diethoxide.

4,565,799

IONICALLY POLYMER-BOUND TRANSITION METAL COMPLEX FOR PHOTOCHEMICAL CONVERSION OF LIGHT ENERGY

Paul J. Giordano, Jr., Hudson, and Richard C. Smierciak, Streetsboro, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Jul. 12, 1984, Ser. No. 630,097
Int. Cl.[4] B01J *31/08, 31/22*
U.S. Cl. 502—155 **26 Claims**

1. A catalyst for the photochemical conversion and storage of radiant energy through the conversion of strained cyclic non-conjugated carbon containing compounds to their corresponding conjugated forms which comprises:

a transition metal complex having a square planar geometry and multiple sites of coordination, wherein said transistion metal complex is a macrocylic tetraaza complex; and

an anion-exhcange resin; wherein said transition metal complex and said anion-exchange resin are bonded together ionically.

4,565,800

HYDROFINING CATALYSTS

Simon G. Kukes; Stephen L. Parrott, and Karlheinz K. Brandes, all of Bartlesville, Okla., assignors to Philips Petroleum Company, Bartlesville, Okla.

Filed Jun. 24, 1985, Ser. No. 748,110
Int. Cl.[4] B01J *23/22*
U.S. Cl. 502—200 **14 Claims**

1. A process for preparing a composition of matter comprising the steps of:

(A) mixing (a) at least one vanadium and oxygen containing compound, (b) at least one nickel (II) compound, (c) ammonia, and (d) water, in such amounts and under such conditions as to obtain a solution;

(B) mixing the solution obtained in step (A) with an alumina-containing support material;

(C) heating the mixture obtained in step (B) at a first temperature under such conditions as to at least partially dry said mixture; and

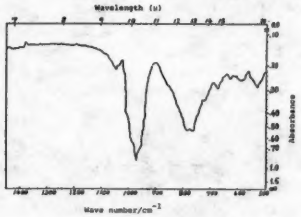
(D) heating the at least partially dried mixture obtained in step (C) at a second temperature, which is higher than said first temperature, under such conditions as to activate said mixture.

4,565,801

HETEROPOLY-ACIDS AND THEIR PRODUCTION AND USE

Shinkichi Shimizu; Hiroshi Ichihashi, and Koichi Nagai, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 23, 1982, Ser. No. 371,223
Claims priority, application Japan, Apr. 24, 1981, 56-62710
Int. Cl.[4] B01J *27/14*
U.S. Cl. 502—209 9 Claims



1. A heteropoly-acid of the formula:

$$H_{3+x}(PMo_{12-x}V_xO_{40}).nH_2O$$

wherein x and n are numbers satisfying respectively the equations: $0 \leqq x \leqq 3$ and $n \leqq 6$, and comprising phosphorus as the central atom and molybdenum or molybdenum and vanadium as the coordinating atoms, or its reduction-form product, which is in a cubic crystal structure having diffraction lines at lattice spacings (d) of at least 8.4, 6.8, 5.9, 4.8, 4.2 and 3.4 in the X-ray powder diffraction.

4,565,802

SILICA-CONTAINING CATALYSTS

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 157,211, Jun. 9, 1980, Pat. No. 4,433,187, which is a division of Ser. No. 12,868, Feb. 16, 1979, Pat. No. 4,270,017. This application Dec. 5, 1983, Ser. No. 558,170
Int. Cl.[4] B01J *27/82, 21/08*
U.S. Cl. 502—214 19 Claims

1. A catalyst composite comprising about 9 weight percent to about 91 weight percent of a silica polymorph consisting of crystalline silica, said silica polymorph, after calcination in air at 600° C. for one hour, having a mean refractive index of 1.39 ± 0.01 and a specific gravity at 25° C. of 170 ± 0.05 g/cc., and about 9 weight percent to about 91 weight percent Catapal alumina.

3. The catalyst component defined in claim 1 which comprises a phosphorus-containing component.

4,565,803

METHANOL SYNTHESIS CATALYST

Galeon W. Schoenthal, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 16, 1983, Ser. No. 562,304
Int. Cl.[4] B01J *21/04, 23/06, 23/10, 23/72*
U.S. Cl. 502—303 10 Claims

1. A catalyst composition to be used for the conversion of syngas to methanol which comprises copper, zinc and a modifier selected from the group consisting of yttrium, a lanthanide element, an actinide element and mixtures thereof supported on a zinc-aluminum oxide spinel carrier wherein the amount of said modifier is from 1 to 25 weight percent based on total catalyst composition, calculated as metal, the relative proportions of copper oxide to zinc oxide are from 1:10 to 20:1, calculated as weight percent metal, wherein said composition is prepared by a process comprising:

a. precipitating a first precipitate from an aqueous solution of dissolved zinc and aluminum salts utilizing as a precipitating agent an aqueous solution of alkali metal or ammonium carbonate,

b. slurrying the first precipitate in an aqueous solution containing dissolved salts of copper, zinc and promoter,

c. precipitating a second precipitate from the slurry-solution of step b utilizing as a precipitating agent an aqueous solution of alkali metal or ammonium carbonate,

d. washing, drying and calcining the precipitate of Step c at a temperature ranging from about 200° C. to about 400° C. and

e. activating in a hydrogen-containing atmosphere at a temperature ranging from about 175° C. to about 400° C.

4,565,804

GNRH ANTAGONISTS VI

Jean E. F. Rivier, and Wylie W. Vale, Jr., both of La Jolla, Calif., assignors to The Salk Institute For Biological Studies, San Diego, Calif.

Filed Sep. 7, 1984, Ser. No. 648,637
Int. Cl.[4] C07C *103/52;* A61K *37/02*
U.S. Cl. 514—15 20 Claims

1. A peptide or a nontoxic salt thereof, said peptide having the formula: X-R_1-(W)D-Phe-R_3-R_4-R_5-R_6(V)-R_7-Arg-Pro-R_{10} wherein X is hydrogen or an acyl group having 7 or less carbon atoms; R_1 is dehydro-Pro, Pro, D-pGlu, D-Phe, D-Trp or β-D-NAL; W is 4F, 4Cl, 2,4Cl_2, 3,4Cl_2, 4Br, 4NO_2 or C^{α}Me-4Cl; R_3 is D-Trp, (N^{in}For)D-Trp or D-Trp which is substituted in the 5- or 6-position with NO_2, NH_2, OCH_3, F, Cl, Br or CH_3; R_4 is Ser, Orn, AAL or aBu; R_5 is Tyr, (3F)Phe, (2F)Phe, (3I)Tyr, (3CH_3)Phe, (2CH_3)Phe, (3Cl)Phe or (2Cl)Phe; R_6 is D-Lys, D-Orn or D-Dap; V is (arg-R',R'')$_n$(X), with n being 1 to 5 and R' and R'' being H, methyl, ethyl, propyl or butyl; R_7 is Leu, NML, Nle or Nva; and R_{10} is Gly-NH_2, D-Ala-NH_2 or NH-Y, with Y being lower alkyl, cycloalkyl, fluoro lower alkyl or NHCONH-Q, where Q is H or lower alkyl.

4,565,805

PHARMACEUTICAL PREPARATION FOR THE TREATMENT OF PEPTIC ULCER

Vladimir N. Smirnov, Juzhinsky pereulok, 3, kv. 7; Mikhail I. Titov, Kuntsevskaya ulitsa, 1/5, kv. 368; Zhanna D. Bespalova, Kuntsevskaya ulitsa, 1/5, kv. 229; Andrei A. Azmuko, ulitsa Ukhtomskaya, 13, kv. 21; Tatyana R. Sax, ulitsa Marshala Timoshenko, 34, kv. 115; Oleg S. Medvedev, Berezhkovskaya naberezhnaya, 14, kv. 32; Nadezhda I. Rozhanskaya, ulitsa Dmitria Ulyanova, 4, korpus 2, kv. 226; Vsevolod G. Smagin, ulitsa Vesnina, 30, kv. 17; Valentin A. Vinogradov, Khoroshevskoe shosse, 34, kv. 38; Vladimir M. Polonsky, prospekt Mira, 91, korpus 3, kv. 386; Sergei A. Bulgakov, Ruzheiny pereulok, 4, kv. 17, and Vladimir N. Ivanov, Kavkazsky bulvar, 38, kv. 18, all of Moscow, U.S.S.R.

PCT No. PCT/SU83/00039, § 371 Date Jul. 20, 1984, § 102(e) Date Jul. 20, 1984, PCT Pub. No. WO84/02470, PCT Pub. Date Jul. 5, 1984
PCT Filed Oct. 31, 1983, Ser. No. 633,909
Int. Cl.[4] A61K *37/00;* C07C *103/52*
U.S. Cl. 514—17 6 Claims

1. A process for the treatment of peptic ulcer in a warm blooded animal which comprises administering to said warm blooded animal an anti-peptic ulcer effective amount of a peptide of the following structure:

Tyr-D-Ala-Gly-Phe-Leu-Arg

in a pharmaceutically acceptable carrier.

4,565,806

COMPOSITION AND METHOD FOR RATIONAL TREATMENT OF CANCER

Kai M. E. Setälä, Uimarinpolku 10 B, 00330 Helsinki 33, Finland

Continuation-in-part of Ser. No. 293,973, Aug. 18, 1981. This application May 11, 1984, Ser. No. 609,475

Int. Cl.[4] A61K *31/715, 31/725, 31/66, 31/505*

U.S. Cl. 514—54 **5 Claims**

1. A method of treatment of skin cancer in man comprising percutaneous or intravenous administration thereto of an effective dosage of a composition comprising in combination dimethylsulfoxide and a therepeutically effective subthreshold dose of a cytostatic agent selected from the group consisting of colchicine, vinblastine sulfate, phloridzin, triethylene thiophosphamide, cyclophosphamide, humic acid, fluorouracil and mechlorethamine.

4,565,807

MEDICINAL COMPOSITION CONTAINING PIRPROFEN AND CYCLODEXTRIN AND A METHOD OF USE

Kaneto Uekama, Kumamoto; Mikio Hanafusa, Sanda; Masashi Tatsumi, Takatsuki, and Tohru Hibi, Toyonaka, all of Japan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,793

Claims priority, application Japan, Jul. 19, 1982, 57-125559

Int. Cl.[4] A61K *31/73;* **C08B** *37/16*

U.S. Cl. 514—58 **13 Claims**

1. A pharmaceutical composition comprising an analgesic, antiinflammatory and antipyretic effective amount of an inclusion compound of α-[3-chloro-4-(3-pyrrolin-1-yl)-phenyl]-propionic acid and a cyclodextrin, and a pharmaceutically acceptable carrier.

4,565,808

3-PHOSPHONATE CARBAPENEMS

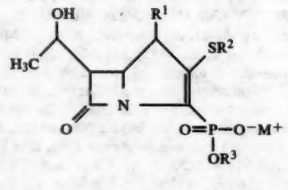
W. Alexander Andrus, Fanwood; Burton G. Christensen, Cliffside Park, and James V. Heck, Fanwood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 6, 1983, Ser. No. 529,194

Int. Cl.[4] A61K *31/675;* **C07P** *9/65*

U.S. Cl. 514—80 **8 Claims**

1. A compound of the formula:

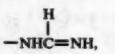


I

wherein

R^1 is hydrogen, alkyl having 1 to 6 carbon atoms, amino, —NHCO-alkyl wherein the alkyl moiety has 1 to 6 carbon atoms, hydroxy, alkoxy wherein the alkyl moiety has 1 to 6 carbon atoms, halo, hydroxyalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, carboxyl or trifluoromethyl;

R^2 is alkyl having 1 to 6 carbon atoms, substituted alkyl wherein the alkyl moiety has 1 to 6 carbon atoms and is substituted with cyano, amino or

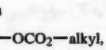


phenyl, phenyl substituted with at least one substituent wherein the substituents are selected from amino, —NHCOCH$_3$, —NHCH=NH, aminoalkyl wherein the alkyl moiety has 1 to 6 carbon atoms, nitro, halo, alkyl having 1 to 6 carbon atoms and trifluoromethyl, pyrrolidinyl, N-substituted pyrrolidinyl wherein the substituent is selected from —CH=NH and

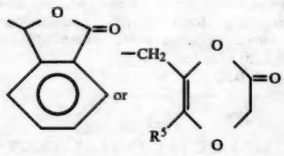
3-Δ^1-2-amino-pyrrolidinyl, piperidinyl, 3-Δ^1-2-amino-piperidinyl, and N,N-dimethylcarboxamidine; and

R^3 is hydrogen, a metal cation, alkyl having 1 to 6 carbon atoms, benzyl, substituted benzyl wherein the phenyl moiety of the benzyl group may be substituted with alkyl having 1 to 6 carbon atoms, chloro, fluoro or bromo,

wherein the alkyl group has 1 to 6 carbon atoms,



wherein the alkyl group has 1 to 6 carbon atoms,



wherein R^5 is hydrogen or alkyl having 1 to 6 carbon atoms; and

M is a metal cation or H^+.

7. An antibacterial pharmaceutical composition comprising an effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,565,809

S-ARALKYLTRITHIOPHOSPHONATE INSECTICIDES

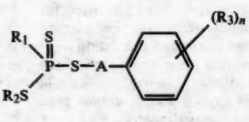
Charles G. Chavdarian, Martinez, and David B. Kanne, Richmond, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Filed Jun. 4, 1984, Ser. No. 617,210

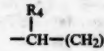
Int. Cl.[4] A01N *57/22;* **C07F** *9/40*

U.S. Cl. 514—112 **73 Claims**

1. A method for controlling insects comprising applying to said insects or a locus at which control is desired an insecticidally effective amount of a compound having the formula

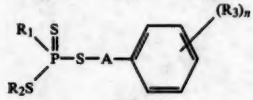


in which R_1 is C_1–C_3 alkyl; R_2 is C_3–C_6 alkyl; R_3 is hydrogen, halo, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, phenoxy, cyano, nitro or C_2–C_5 carboalkoxy; n is an integer from 1 to 5; —A— is

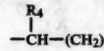


R_4 is hydrogen, C_1–C_4 alkyl, or $—CH_2Y$; m is 0 or 1; and Y is halo.

10. A compound having the formula



in which R_1 is C_1–C_3 alkyl; R_2 is C_3–C_6 alkyl; R_3 is hydrogen, halo, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, phenoxy, cyano, nitro or C_2–C_5 carboalkoxy; n is an integer from 1 to 5; —A— is



R_4 is hydrogen, C_1–C_4 alkyl, or $—CH_2Y$; m is 0 or 1; and Y is halo.

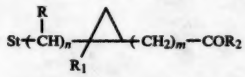
4,565,810

DERIVATIVES OF BILIARY ACIDS, PROCESS FOR THE PRODUCTION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Virginio Castagnola, Milan; E. Giuliano Frigerio, Bresso, and Roberto Pellicciari, Perugia, all of Italy, assignors to Lehner A.G., Muttenz, Switzerland

Filed Apr. 24, 1984, Ser. No. 603,332
Claims priority, application Italy, Apr. 29, 1983, 20843 A/83
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—182 **15 Claims**

1. Compounds of general formula I



I

wherein: St represents the 17-ethiocholanyl residue, having two or more hydroxy groups both in the α and β conformation, some of which being optionally replaced by keto groups;

n is zero or 1:

R and R^1 represent hydrogen or methyl, with the proviso that when one of them is methyl the other one is hydrogen;

m is zero, 1 or 2;

R^2 represents OH or taurine or glycine residues, optionally salified, of formula $—NH(CH_2)_2SO_3H$ and $NHCH_2COOH$;

with the proviso that when N is 1, m is zero and, when n is 1 and R is methyl, R_2 is different from OH.

15. Pharmaceutical compositions characterized by containing as the active ingredient one or more compounds of claim **1**.

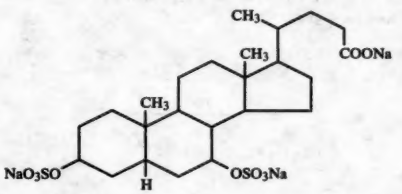
4,565,811

SODIUM SALT OF URSODEOXYCHOLIC SULPHATE

Michele G. Di Schiena, Milan, Italy, assignor to Istituto Biologico Chemioterapico "ABC" S.p.A., Turin, Italy

Filed Feb. 22, 1984, Ser. No. 582,522
Claims priority, application Italy, Feb. 24, 1983, 19737 A/83
Int. Cl.[4] A61K *31/56*; C07J *7/00*
U.S. Cl. 514—182 **3 Claims**

1. Trisodium salt of ursodeoxycholic O-sulphate having the following general formula I:



(I)

3. A pharmaceutical composition comprising the compound of claim **1** and a pharmaceutically acceptable carrier.

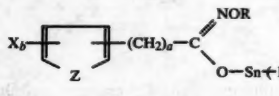
4,565,812

FUNGICIDAL TIN SALTS OF THIENYL AND FURYL HYDROXAMIC ACIDS, COMPOSITIONS, AND METHOD OF USE THEREFOR

William F. King, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 30, 1984, Ser. No. 676,706
Int. Cl.[4] C07D *333/16, 307/42*; A61K *31/34, 31/38*
U.S. Cl. 514—189 **35 Claims**

1. A compound of the formula:



wherein Z is sulfur or oxygen; R is alkyl of 1 to 7 carbon atoms; R^1 is aryl of 6 to 10 carbon atoms, lower alkyl of 1 to 6 carbon atoms or cycloalkyl of 3 to 8 carbons, all optionally substituted with 1 to 3 halogen atoms; a is 0 or 1; b is 0, 1, or 2; X is independently halo, nitro, trihalomethyl, lower alkyl of 1 to 3 carbon atoms, or lower alkoxy of 1 to 3 carbon atoms.

20. A fungicidal composition which comprises an inert carrier and a fungicidally effective amount of a compound of claim **1**.

28. A method of controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of claim **1**.

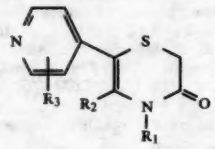
4,565,813

1,4-THIAZINE DERIVATIVES

Muneaki Takase, Oizumi; Kimitomo Yoshioka, Tokyo, and Hiroaki Yamazaki, Fujishiro, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1984, Ser. No. 650,530
Claims priority, application Japan, Sep. 16, 1983, 58-170862
Int. Cl.[4] C07D *401/04*; A61K *31/54*
U.S. Cl. 514—222 **7 Claims**

1. A 1,4thiazine derivative represented by the following formula I and a pharmaceutically acceptable acid addition salt thereof:



I

wherein R_1,R_2 and R_3 respectively represent a hydrogen atom or a lower alkyl group.

4,565,814

PYRIDAZINE DERIVATIVES HAVING A PSYCHOTROPIC ACTION AND COMPOSITIONS

Jean-Paul Kan; Kathleen Biziere, both of Clapiers, and Camille-Georges Wermuth, Strasbourg, all of France, assignors to Sanofi, Paris, France

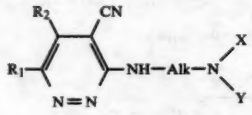
Filed Jan. 18, 1984, Ser. No. 571,696

Claims priority, application France, Jan. 28, 1983, 83 01366; Nov. 18, 1983, 83 18433

Int. Cl.[4] **A61K** *31/535;* **C07D** *413/12, 413/14*

U.S. Cl. 514—228 **13 Claims**

1. A 4-cyanopyridazine corresponding to the formula:



(I)

in which:

one of the substituents R_1 and R_2 represents hydrogen or a lower alkyl group and the other represents hydrogen; a C_1–C_6 alkyl group; a C_3–C_7 cycloalkyl group; a phenyl group; a phenyl group monosubstituted by a halogen atom, a trifluoromethyl group, a hydroxyl group, a C_1–C_6 alkoxy group, a C_1–C_6 alkyl group, a C_1–C_6 alkanoyloxy group, a cyano group, a C_1–C_6 alkylthio group, a C_1–C_6 alkylsulphinyl group, a C_1–C_6 alkylsulphonyl group, a nitro group, or a sulphamyl group; a phenyl group disubstituted by one of the abovementioned substituents and at least a chlorine atom, a fluorine atom or a methoxy group; a naphth-1-yl group; a naphth-2-yl group; a thien-2-yl group; a thien-3-yl group; or an indol-3-yl group;

Alk represents an ethylene group, a 1,2-propylene group or a 1,3-propylene group;

the group

represents a morpholin-4-yl or 3-oxomorpholin-4-yl group, and pharmaceutically acceptable salts thereof.

12. A pharmaceutical composition containing as active ingredient the compound of claim **1** present in an amount sufficient to produce psychotropic action and a pharmaceutically acceptable carrier.

4,565,815

PYRAZOLO[1,5-A]-1,3,5-TRIAZINES

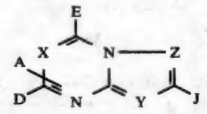
Sun H. Kim, Chestnut Hill, and Jacques-Pierre Moreau, Upton, both of Mass., assignors to Biomeasure, Inc., Hopkinton, Mass.

Continuation-in-part of Ser. No. 454,734, Dec. 30, 1982, abandoned. This application May 25, 1984, Ser. No. 614,454

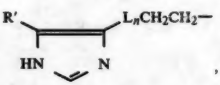
Int. Cl.[4] **C07D** *487/04, 403/14, 407/14;* **A61K** *31/415*

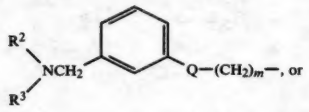
U.S. Cl. 514—246 **14 Claims**

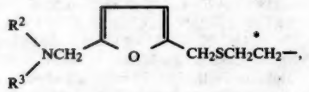
1. A compound having anti-ulcer activity and having the formula



wherein D is H, SH, OH, R^4S where R^4 is a lower alkyl group containing between 1 and 7 carbon atoms, inclusive, or NH_2; E is OH or NH_2; J is H or phenyl; X is N; Y is, CH or CT, wherein T is a halogen; Z is N; A is







and replaces a hydrogen of, D or E; R^1 is H or CH_3; L is CH_2S; Q is O or CH_2S; n is 0 or 1; 2 m 4; each R^2 and R^3, independently, is H, lower alkyl containing between 1 and 7 carbon atoms, inclusive, cycloalkyl containing between 3 and 6 carbon atoms, inclusive, benzyl, or phenethyl; or R^2 and R^3, together with the nitrogen atom to which they are attached, form a morpholino, piperidino, or N-alkyl piperazino ring;

or a pharmaceutically acceptable salt thereof.

4,565,816

PIPERAZINE DERIVATIVES AND PHARMACEUTICAL COMPOSITION CONTAINING THEM

Peter Neumann, Berne, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

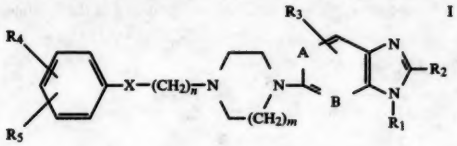
Filed May 27, 1983, Ser. No. 498,952

Claims priority, application Switzerland, May 28, 1982, 3317/82; Jun. 2, 1982, 3379/82; Jul. 22, 1982, 4484/82; Jul. 22, 1982, 4485/82

Int. Cl.[4] **A61K** *31/495;* **C07D** *401/14*

U.S. Cl. 514—253 **6 Claims**

1. A compound of formula I,



wherein one of A and B is N and the other CH,

R_1 and R_2 are each, independently, hydrogen, (C_{1-6})-alkyl or (C_{7-10})phenylalkyl, optionally monosubstituted in the phenyl ring by halogen, (C_{1-4})alkyl or (C_{1-4})alkoxy,

R_3 is hydrogen or (C_{1-4})alkyl,

m is 1 or 2,

R_4 and R_5 are each, independently, hydrogen, halogen, (C_{1-4})alkyl, (C_{1-4})alkoxy, (C_{2-4})acyl or trifluoromethyl, and

X is $—CH_2—$ and n is 0, 1 2 or 3, or

X is —CO— and n is 1, 2 or 3, or

X is —O— and n is 2 or 3,

or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition useful in treating schizophrenia, hypertension and cardiac disorders comprising a pharmaceutically acceptable carrier or diluent and a therapeutically effective amount of a compound of claim 1, or a pharmaceutically acceptable acid addition salt thereof.

4,565,817

THEOPHYLLINYL-ALKYL-OXADIAZOLES, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Dezsö Korbonits; Maria Szomor née Wundele; Gergely Héja, all of Budapest; Ida Szvoboda née Kanzel, Dunakeszi; Pál Kiss; Csaba Gönczi, both of Budapest; Endre Pálosi; Gábor Kovács, both of Budapest; Judit Kun, Budapest; Emil Minker, Szeged; Sándor Virág; Gyula Sebestyén, both of Budapest, and Tamás Szüts, Budapest, all of Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

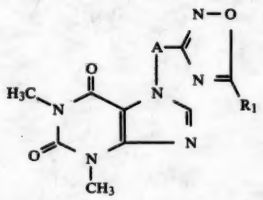
Filed Mar. 11, 1983, Ser. No. 474,227

Claims priority, application Hungary, Dec. 3, 1982, 762/82

Int. Cl.[4] C07D *473/10;* A61K *31/52*

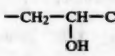
U.S. Cl. 514—263 **6 Claims**

1. A compound of the formula I

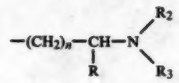


(I)

or a physiological acceptable addition salt thereof, wherein A stands for straight or branched chain C_{1-5} alkylene or



R_1 stands for straight or branched chain C_{1-10} alkyl, halogenoalkyl, hydroxyalkyl, C_{5-6} cycloalkyl, vinyl, 2-ethoxyethyl, carbonylalkyl or aminoalkyl of the formula



wherein R stands for hydrogen or methyl,

n is 0 to 3,

R_2 stands for hydrogen or straight or branched chain alkyl,

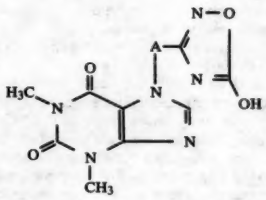
R_3 stands for hydrogen or straight or branched chain alkyl or,

R_2 and R_3 together with the nitrogen atom may form a 5–6 membered ring, which ring can optionally contain an oxygen or a second nitrogen atom, the latter, optionally substituted by methyl or,

R_1 can stand for a phenyl group of the formula $R_4R_5C_6H_3$ wherein

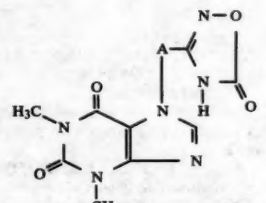
R_4 and R_5 represent independently hydrogen, chlorine, hydroxy, methoxy, ethoxy, methyl or amino or,

R_1 may further stand for hydroxy, in this case the compound of the formula I may exist according to the conditions in the form of tautomers of the formula Ia



(Ia)

or



(Ib)

and R_1 may further stand for benzyl, 2,2-diphenylethyl or theophyllin-7-yl-methyl.

4,565,818

PHARMACEUTICALLY ACTIVE 1,2,3,4,4A,5,10,10A-OCTAHYDRO-BENZO[G]QUINOLINE DERIVATIVES

René Nordmann, Basel, and Trevor J. Petcher, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

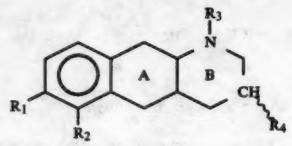
Filed Oct. 14, 1982, Ser. No. 434,202

Claims priority, application Switzerland, Oct. 16, 1981, 6631/81; Jun. 25, 1982, 3927/81

Int. Cl.[4] C07D *221/08, 401/12, 401/06;* A61K *31/435*

U.S. Cl. 514—290 **16 Claims**

1. A benzo[g]quinoline of formula I,



(I)

wherein
the rings A and B are trans-fused and wherein
R_1 and R_2 are each independently hydrogen, hydroxy or methoxy, with the proviso that R_1 and R_2 may not both be hydrogen;
R_3 is hydrogen or C_{1-4}alkyl;
R_4 is —COOH, $—CH_2OR_5$, $—CH_2CN$, $—CON(R_6)R_7$, $—CH_2SR_8$, $—NHSO_2N(R_9)R_{10}$ or $—NHCON(R_9)R_{10}$,
R_5 is hydrogen or C_{1-3}alkyl,
R_6 is hydrogen or C_{1-3}alkyl and
R_7 is hydrogen, C_{1-3}alkyl, phenyl or pyridyl, said phenyl or pyridyl being optionally substituted by halogen, methyl or methoxy or
R_6 and R_7 together are $—(CH_2)_4—$, $—(CH_2)_5—$ or $—(CH_2)_2—O—(CH_2)_2—$,
R_8 is C_{1-4}alkyl or pyridyl, said pyridyl being optionally substituted by halogen, methyl or methoxy, and
R_9 and R_{10} are each independently hydrogen or C_{1-3}alkyl or together are $—(CH_2)_4—$ or $—(CH_2)_5—$,
or a physiologically-hydrolysable and -acceptable ester thereof, in free or in pharmaceutically acceptable salt form.

9. A pharmaceutical composition for use in inhibiting prolactin secretion, treating Morbus Parkinson or in the treatment or prophylaxis of coronary disease, hypertension or oliguric renal failure comprising a pharmaceutically effective amount of a compound according to claim 1 in free or in pharmaceutically acceptable salt form, together with a pharmaceutically acceptable diluent or carrier therefor.

4,565,819

SUBSTITUTED IMINO DIACIDS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS WHICH CONTAIN THEM

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to ADIR, Neuilly-sur-Seine, France

Continuation of Ser. No. 308,234, Oct. 2, 1981, Pat. No. 4,508,729, which is a continuation-in-part of Ser. No. 212,607, Dec. 3, 1980, Pat. No. 4,404,206. This application Sep. 20, 1982, Ser. No. 420,005

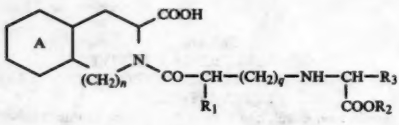
Claims priority, application France, Dec. 7, 1979, 79 30046; Jul. 31, 1980, 80 16875; Oct. 2, 1980, 80 21095; Apr. 7, 1981, 81 06916

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.[4] **C07D** *217/26;* **A61K** *31/47*

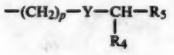
U.S. Cl. 514—307 **9 Claims**

1. Compounds having the general formula:



(I)

wherein
the ring A is saturated and n=1,
R_1 represents a lower alkyl group having from 1 to 4 carbon atoms which can carry an amino group,
R_2 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms,
R_3 represents a straight or branched alkyl group, a monoor di-cycloalkylalkyl group having no more than a total of 9 carbon atoms, or a substituted alkyl group of the formula:



with
R_4=H, a lower alkyl (C_1 to C_4) or a cycloalkyl (C_3 to C_6) group,
$R_5$32 H, a lower alkyl (C_1 to C_4), a cycloalkyl (C_3 to C_6) or an alkoxycarbonyl group,
Y=S or >N—Q where Q=H, or an acetyl or benzyloxycarbonyl group,
and
p=1 or 2, and
a=0 or 1
in their racemic form or as optical isomers, and the salts thereof obtained with a therapeutically compatible inorganic or organic base, or their addition salts obtained with a pharmaceutically compatible inorganic or organic acid.

4,565,820

HYPOGLYCEMIC 5-PYRROLYL, INDOLYL AND QUINOLYL SUBSTITUTED OXAZOLIDINE-2,4-DIONES AND THEIR USE

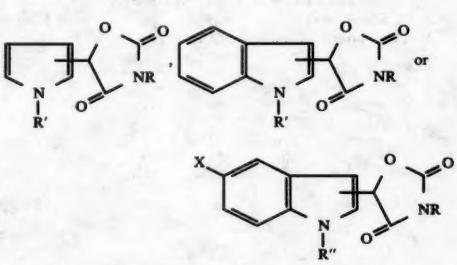
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 380,176, May 20, 1982, Pat. No. 4,310,810, which is a division of Ser. No. 252,962, Apr. 23, 1981, Pat. No. 4,342,771, which is a continuation-in-part of Ser. No. 222,202, Jan. 2, 1981, Pat. No. 4,367,234, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Jan. 26, 1984, Ser. No. 574,236

Int. Cl.[4] **A61K** *31/40, 31/47;* **C07D** *411/02, 413/04*

U.S. Cl. 514—314 **15 Claims**

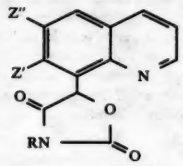
1. A compound of the formula



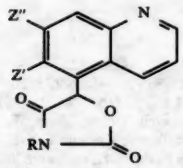
or a pharmaceutically acceptable salt thereof, wherein
R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;
R′ is (C_1–C_4)-alkyl or phenyl;
R″ is hydrogen, (C_1–C_4)-alkyl or phenyl; and
X is halo.

7. A method of lowering the blood glucose in a hyperglycemic mammal which comprises administering a blood glucose lowering amount of a compound of claim 1.

8. A compound of the formula



or



or a pharmaceutically acceptable salt thereof; wherein

R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;

Z′ is hydrogen, halo or (C_1–C_3)-alkoxy; and

Z″ is hydrogen or halo.

15. A method of lowering the blood glucose in a hyperglycemic mammal which comprises administering a blood glucose lowering amount of a compound of claim **8**.

4,565,821

METHOD AND OPHTHALMIC COMPOSITION FOR TREATING OCULAR HYPERTENSION AND GLAUCOMA WITH BUTYROPHENONES

George C. Y. Chiou, College Station, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Mar. 21, 1983, Ser. No. 477,179

Int. Cl.⁴ A61K *31/445*

U.S. Cl. 514—327 **15 Claims**

1. A method of reducing aqueous humor formation and intraocular pressure in mammals having ocular hypertension which comprises topically administering to a hypertensive eye an opthalmologically acceptable amount, effective for lowering intraocular pressure, of a compound selected from opthamologically acceptable 4-piperadino-4′-fluoro-butyrophenones and opthalmologically acceptable acid addition salts thereof.

4,565,822

2-FLUORO-2-CYANOETHENYL CYCLOPROPANE CARBOXYLATES AS PESTICIDES

Jean Tessier, Vincennes; André Teche, and Pierre Girault, both of Paris, all of France, assignors to Roussel Uclaf, Paris, France

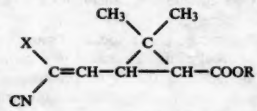
Filed Aug. 2, 1984, Ser. No. 637,106

Claims priority, application France, Aug. 4, 1983, 83 12858; Jan. 19, 1984, 84 00798

Int. Cl.⁴ C07D *213/65*; C07C *121/48*; A01N *53/00*

U.S. Cl. 514—351 **26 Claims**

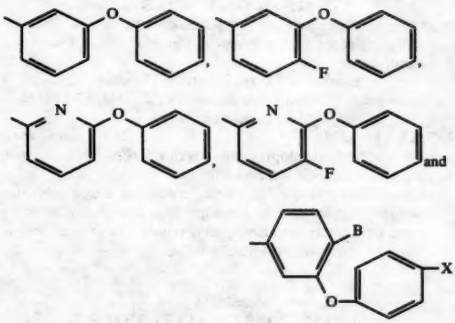
1. A cyclopropanecarboxylate in all possible isomeric forms or mixtures thereof of the formula



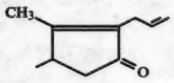
I

with a 1R,cis, (E) or (Z) structure and wherein X is fluorine, R is selected from the group consisting of (A) optionally unsaturated alkyl of 2 to 12 carbon atoms, (B) optionally unsaturated cycloalkyl of 3 to 12 carbon atoms, (c)

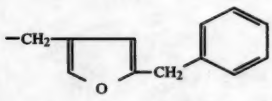
Z is selected from the group consisting of —C≡CH, —CH_3 and —CN and Ar is selected from the group consisting of —C_6H_5, —C_6F_5,



B is hydrogen or fluorine and X is fluorine, chlorine or bromine

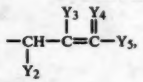


(D)



(E)

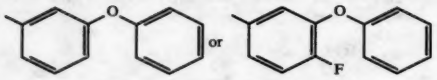
and



(F)

Y_2 is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, —C≡N and —C≡CH, Y_3, Y_4 and Y_5 are individually selected from the group consisting of hydrogen, fluorine, chlorine, bromine alkyl of 1 to 8 carbon atoms and cycloalkyl of 3 to 8 carbon atoms alkenyl of 2 to 8 carbon atoms and alkynyl of 2 to 8 carbon atoms, and two of Y_3, Y_4 and Y_5 can form rings between them with the proviso that if X is bromine and R is

and Z is cyano or ethynyl and A_r is



the carbon carrying Z is in the (S) configuration and the double bond in the 3-side chain may have E or Z structure.

7. A pesticidal composition comprising an amount effective to combat insects, nematodes and parasitic acariens of at least one compound of claim 1 and an inert carrier.

4,565,823

MEDICAL AGENT FOR SUPPRESSING ARTERIOSCLEROSIS

Isao Ohata, Saitama, and Nobuo Sakamoto, Chiba, both of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,024

Claims priority, application Japan, Jul. 2, 1982, 57-114946

Int. Cl.[4] A61K *31/44*

U.S. Cl. 514—356 **6 Claims**

1. A method of suppressing arteriosclerosis in a subject having said condition which comprises:

administering to the subject being treated an arteriosclerosis suppressing amount of a composition containing nicardipine or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

4,565,824

CERTAIN NITRATOALKYL ESTER DIHYDROPYRIDINES HAVING ANTIHYPERTENSIVE PROPERTIES

Egbert Wehinger; Horst Meyer; Stanislav Kazda, and Andreas Knorr, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

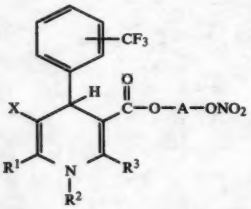
Filed Nov. 9, 1983, Ser. No. 550,321

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244178

Int. Cl.[4] C07D *211/90*; A61K *31/455*

U.S. Cl. 514—356 **16 Claims**

11. A 1,4-dihydropyridine of the formula



in which

B represents nitro or CF_3,

R^1 and R^3, which can be identical or different, denote hydrogen, a straight-chain or branched alkyl radical with 1 to 4 carbon atoms, a phenyl radical or a benzyl radical,

R^2 represents a hydrogen atom or a straight-chain or branched alkyl radical with 1 to 8 carbon atoms, the alkyl radical optionally being interrupted in the alkyl chain by an oxygen atom, or a phenyl radical or a benzyl radical,

A represents a straight-chain or branched alkylene radical,

X represents the group —COR^4,

wherein

R^4 represents a straight-chain or branched alkyl radical with 1 to 4 carbon atoms, or

X represents the group —$COOR^5$,

wherein

R^5 represents an alkyl radical which has up to 20 carbon atoms and is optionally interrupted by oxygen,

or a pharmaceutically acceptable acid addition salt thereof.

14. An antihypertensive composition of matter comprising an amount of a dihydropyridine or salt according to claim 11 effective in the treatment of hypertension in admixture with a pharmaceutically acceptable diluent.

4,565,825

ANTIHYPERTENSIVE N-BENZIMIDAZOLYL- AND N-IMIDAZOLYL-AMINO ACID DERIVATIVES

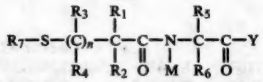
John T. Suh, Greenwich, Conn.; Jerry W. Skiles, Tuckahoe, N.Y.; Bruce E. Williams, Cottage Grove, Minn., and Alfred Schwab, Williston Park, N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Division of Ser. No. 323,852, Nov. 23, 1981, Pat. No. 4,507,312, which is a division of Ser. No. 200,180, Oct. 24, 1980, Pat. No. 4,304,771, which is a continuation-in-part of Ser. No. 57,175, Jul. 13, 1979, Pat. No. 4,256,761. This application Nov. 19, 1984, Ser. No. 672,747

Int. Cl.[4] A61K *43/50, 43/52*; C07D *233/88, 235/30*

U.S. Cl. 514—394 **7 Claims**

1. A compound of the structure:



wherein p1 R_1, R_2, R_3, R_4, R_5 and R_6 are independently hydrogen, alkyl, alkenyl containing 2 to 6 carbon atoms, alkynyl containing 2 to 6 carbon atoms, phenyl-alkyl, or cycloalkyl containing 3 to 16 carbon atoms,

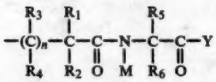
n is an integer from 0 to 4 inclusive,

M is imidazolyl or benzimidazolyl,

Y is hydroxy, alkoxy, amino, aminoalkanoyl, hydrocarbylaryloxy containing from 6 to 10 carbon atoms, aminoalkoxy, or hydroxyalkoxy, and

R_7 is hydrogen, alkanoyl, carboxyalkanoyl, hydroxyalkanoyl, amino-alkanoyl, cyano, amidino, carbalkoxy, ZS, or

wherein Z is hydrogen, alkyl, hydroxyalkyl, aminoalkyl or the radical



wherein R_1, R_2, R_3, R_4, R_5, R_6, n, M and Y are as described above; or where Y is hydroxy, a nontoxic, pharmaceutically acceptable alkali metal, alkaline earth metal, or amine salt thereof,

wherein the alkyl groups per se and alkyl moieties of groups containing an alkyl group, contain 1 to 6 carbon atoms.

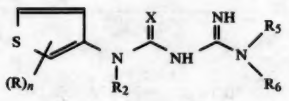
7. A method of reducing the blood pressure in mammals having hypertension which comprises administering to said animals an effective amount of a compound according to claim 1.

4,565,826
HETEROCYCLIC AMIDINOUREAS

William L. Studt, Harleysville; Harry K. Zimmerman, Quakertown, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 262,811, May 12, 1981, Pat. No. 4,436,911.
This application Feb. 24, 1984, Ser. No. 583,235
Int. Cl.[4] A61K *31/38;* C07D *333/36*
U.S. Cl. 514—447 7 Claims

1. A compound of the formula



wherein

X is O or S;

n is 0 to 3;

R_2 is hydrogen or lower alkyl;

R_5 and R_6 are hydrogen, lower alkyl, lower alkoxy, cycloalkyl, aryl, lower alkenyl, or aralkyl,

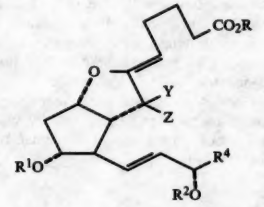
(R) is a ring substituent selected from the group consisting of lower alkyl, lower alkoxy, halo, lower alkyl, acyloxy, carboxyl, cyano, lower alkenyl, lower alkynyl, aryl, carbamoyl, nitro, amino, lower alkylamino, sulfonyl, lower alkanoyl, lower alkyl amido, amino lower alkyl, aralkyl, alkaryl and halo lower alkyl; or a nontoxic pharmaceutically acceptable salt thereof.

4,565,827
7-SUBSTITUTED PGI_2-DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

István Székely, Dunakeszi; Marianna Lovász née Gáspár, Budapest; Gábor Kovács, Budapest; Krisztina Kékesi, Debrecen; Sándor Botár, Budapest; Károly Horváth, Budapest; Péter Körmöczy, Budapest; Pál Hadházy, Budapest; István Rákóczy, Budapest, and László Fésüs, Debrecen, all of Hungary, assignors to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Oct. 27, 1981, Ser. No. 315,408
Claims priority, application Hungary, Oct. 27, 1980, 2587/80; Oct. 27, 1980, 2588/80; Oct. 27, 1980, 2589/80
Int. Cl.[4] C07D *307/935;* A61K *31/34, 31/557*
U.S. Cl. 514—469 11 Claims

1. A compound of the formula (I)



wherein

R is hydrogen, an alkali metal cation, a cation that is derived from a pharmaceutically acceptable amine, or an alkyl group having 1 to 4 carbon atoms;

R^1 and R^2 are hydrogen, a straight or branched alkanoyl of 1 to 4 carbon atoms, benzoyl, tetrahydropyranyl, ethoxyethyl or trialkylsilyl containing alkyl groups of 1 to 4 carbon atoms;

R^4 is straight or branched alkyl of 3 to 7 carbon atoms;

Y is hydrogen;

Z is fluoro, chloro, bromo or a group of the formula —OR^5, wherein

R^5 is hydrogen, straight or branched chain alkyl of 1 to 4 carbon atoms, straight or branched alkanoyl of 1 to 4 carbon atoms, benzoyl, or trialkylsilyl containing alkyl groups of 1 to 4 carbon atoms, or

Y and Z together form a =N—OH, =N—OCH_3, =N—NH—CO—NH_2 or =N—$N(CH_3)_2$ group.

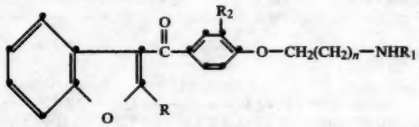
10. A method of inhibiting thrombocyte aggregation in an animal subject which comprises the step of administering to said animal subject a pharmaceutically effective amount of the compound of the formula (I) as defined in claim 1.

4,565,828
BENZOFURAN DERIVATIVES AND THEIR THERAPEUTIC USE

Marcel Descamps, Rosieres, and Peter Polster, Beauvechain, both of Belgium, assignors to Sanofi, Paris, France

Filed Jul. 5, 1984, Ser. No. 628,208
Claims priority, application France, Jul. 18, 1983, 83 11805
Int. Cl.[4] A61K *31/34;* C07D *307/80*
U.S. Cl. 514—469 23 Claims

1. A benzofuran derivative corresponding to the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

R represents an ethyl, n-propyl, isopropyl or n-butyl radical;

R_1 represents a branched-chain alkyl radical having from 4 to 7 carbon atoms wherein at least one of the carbon atoms does not bear a hydrogen atom;

R_2 represents hydrogen, chlorine or bromine;

n is 1 or 2.

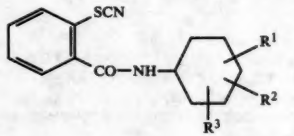
22. A method of inducing calcium-antagonistic and antiadrenergic effects in a subject in need of such treatment which method comprises the administration to said subject of an effective dose of at least one benzofuran derivative as claimed in claim 1.

4,565,829
FUNGICIDAL 2-THIOCYANATO-BENZAMIDES

Hans-Georg Schmitt, Leverkusen; Karlfried Wedemeyer, Cologne; Wilhelm Brandes, Leichlingen, and Paul Reinecke, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 7, 1984, Ser. No. 679,181
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3347073
Int. Cl.[4] A01N *47/48;* C07C *161/02*
U.S. Cl. 514—514 10 Claims

1. A 2-thiocyanato-benzamide of the formula



in which

R^1, R^2 and R^3 are identical or different and represent straight-chain, branched or cyclic alkyl radical with up to 8 carbon atoms, a phenyl-alkyl radical which has 1 to 4

carbon atoms in the alkyl radical and is optionally mono-, di-, tri-, tetra- or penta-substituted by alkyl with 1 to 4 carbon atoms, or a cycloalkyl-alkyl radical with 5 to 8 carbon atoms in the cycloalkyl part and 1 to 4 carbon atoms in the alkyl part, or

R^1 and R^2 independently of one another represent hydrogen.

9. A method of combating fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim 1.

4,565,830

METHOD OF AMELIORATING THE SUBJECTIVE SYMPTOMS AND OBJECTIVE SIGNS IN CONGESTIVE HEART FAILURE

Jun-ichi Azuma, 13-14, Momoyamadai 1-cho, Sakai, Osaka, Japan (590-01)

Filed Dec. 21, 1982, Ser. No. 451,837

Claims priority, application Japan, Dec. 22, 1981, 56-207766

Int. Cl.⁴ A61K *31/185*

U.S. Cl. 514—553 **2 Claims**

1. A method of ameliorating at least one of the subjective symptoms and objective signs consisting of dyspnea, palpitation, hepato-jugular reflux, pulmonary crackles, cardiomegaly and peripheral edema in subjects who were clinically judged to have been in congestive heart failure which comprises administering to said subjects a therapeutically effective amount of taurine.

4,565,831

PROCESS FOR PRODUCING AROMATIC HYDROCARBONS FROM CARBON MONOXIDE AND WATER

Franklin J. Wright, Watchung; Michael A. Richard, Fanwood, and James C. Pirkle, Jr., Lebanon, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 331,160, Dec. 16, 1981, abandoned. This application Sep. 29, 1983, Ser. No. 537,269

Int. Cl.⁴ C07C *1/10*

U.S. Cl. 518—700 **18 Claims**

1. A process for producing liquid hydrocarbons, including those in the C_6–C_{13} range, comprising contacting a mixture of carbon monoxide and water vapor, in a 5:1 to 1:5 volume ratio, respectively, with a catalyst composition, which can be unpromoted or promoted with an agent other than copper or its compounds, wherein said catalyst consists essentially of a mixture of iron compounds and thallium compounds being supported or unsupported, said compound of iron and thallium being selected from the group consisting of an oxide, hydroxide, carbonate, sulfate, carbide, halide, nitrate, or mixtures thereof, wherein said iron compound contains iron value initially being substantially in the trivalent state prior to pretreatment, said thallium compounds being substantially impregnated on the surface of said iron compound, which is pretreated at 270° C. or above, with a gaseous reducing atmosphere, wherein the weight ratio of iron/thallium, taken as the free metals, is from about 100:1 to 1:100, said process being conducted at a temperature of about 250° C. to 550° C. a pressure of about 0.1 to 7.5 MPa, and a space velocity of about 10 to 10,000 v/v/hr., thereby resulting in product liquid hydrocarbons in the C_6–C_{13} range, comprising a substantial amount of C_6–C_{13} aromatic hydrocarbons.

4,565,832

PROCESS FOR PRODUCING PACKING MATERIAL FOR USE IN LIQUID CHROMATOGRAPHY

Toshiyuki Kobashi; Shoyo Takagi, and Hideo Naka, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Nov. 30, 1984, Ser. No. 677,678

Claims priority, application Japan, Feb. 8, 1984, 59-22633

Int. Cl.⁴ C08J *9/28*

U.S. Cl. 521—63 **4 Claims**

1. A process for producing a packing material for use in liquid chromatography which comprises aqueous suspension polymerizing vinyl acetate, a (meth)acrylic acid ester, or a glycidyl monovinyl ester or ether with a monomer mixture composed mainly of a cross-linking monomer in the presence of a diluent selected from among epichlorohydrin and glycidyl ethers, treating the resultant polymer particles so as to ring-open and hydrophilize epoxy groups in said diluent contained in said polymer particles, and washing the treating polymer particles with water.

4,565,833

FIRE RETARDANT COMPOSITION

David L. Buszard, Woodford, and Richard J. Dellar, Altrincham, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 12, 1983, Ser. No. 541,352

Claims priority, application United Kingdom, Oct. 12, 1982, 8229075

Int. Cl.⁴ C08K *5/52, 5/53;* **C08G** *18/08*

U.S. Cl. 521—107 **15 Claims**

1. A fire retardant composition for rigid polyurethanes or polyisocyanurates which comprises (a) dimethyl methyl phosphonate, diethyl ethyl phosphonate or a mixture thereof, and (b) a triaryl phosphate, a trialkyl phosphate or an alkyl/aryl phosphate in a ratio of (a):(b) by weight of 5:95 to 95:5.

4,565,834

STABILIZER-CONTAINING REACTIVE COMPONENTS FOR PU-FOAMS, NEW STABILIZERS AND A PROCESS FOR PRODUCING THESE STABILIZERS

Hans-Josef Buysch, Krefeld; Hans-Walter Illger, Roesrath, and Karl H. Dörner, Pulheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 547,185, Oct. 31, 1983, abandoned, which is a division of Ser. No. 395,552, Jul. 6, 1982, Pat. No. 4,430,452. This application Sep. 17, 1984, Ser. No. 651,397

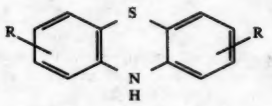
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127750

Int. Cl.⁴ C08J *9/00*

U.S. Cl. 521—121 **6 Claims**

1. Stabilizer-containing reactive components for the production of polyurethane foams with little or no tendency towards core discoloration based on polyisocyanates, polyols and, optionally, water, blowing agents, catalysts, other stabilizers and standard additives, characterized in that they contain as stabilizers monomeric and/or oligomeric derivatives of the diphenylamine series, including the phenothiazine series, in stabilizing quantities of from 0.02 to 5% by weight of compounds corresponding to the general formulae I-II or III,

(a) general formula I:

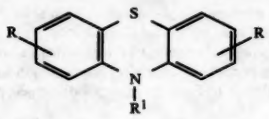


(I)

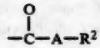
wherein

R represents C_7–C_{18}-aralkyl (the number of carbon atoms indicates the total number in the aryl radical, including its alkyl substituents);

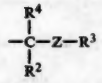
(b) general formula II:



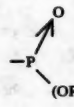
wherein
R is defined as above,
R^1 represents a C_1–C_{18}-alkyl; a C_5–C_{12} cycloalkyl or -cycloalkenyl; a C_7–C_{18}-aralkyl which may optionally be substituted by OH—, SH—, ether, thioether, carbonic ester, carbonamide and carboxyl groups or which may be interrupted by such groups other than OH, SH and COOH-groups and olefinic double bonds; a radical



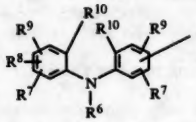
or a radical of the formula

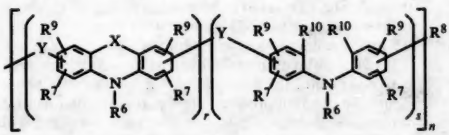


wherein
R^2, R^3 and R^4 are the same or different and represent a C_1–C_{12}-alkyl; a C_5–C_{12}-cycloalkyl or -cycloalkenyl; a C_7–C_{12}-aralkyl;
in addition to which R^2 represents optionally substituted aryl and, together with R^4 and the central C-atom, may form a 5- to 12-member aliphatic ring;
Z represents O, S, NH, NR^5 where $R^5 = R^2$, or a radical of the formula CO—A—R^2, wherein A is a single bond, S, O, NH or NR^2; both here and in the following,
R^2 does not form a ring with R^4; or
Z together with R^3 also represents the radical



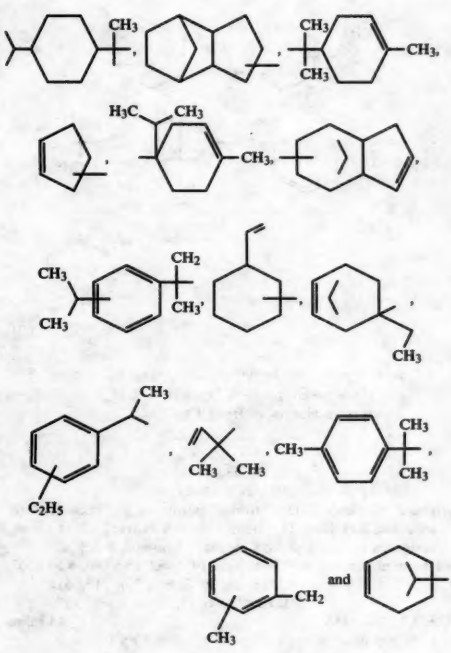
and
(c) general formula III:





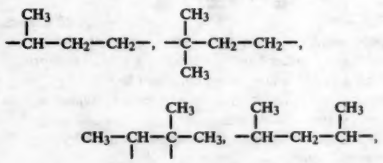
wherein
X is a single bond, >CH_2, >CH, >S, >O, >NR^5,

or >POH;
r and s are integers of from 1 to 29;
R^6 represents H or R^1 as defined above;
R^7, R^9 and R^{10} may be the same or different and represent H, CH_3 or C_2H_5,
R^8 represents H, benzyl, styryl, α-methyl-styryl, tert.-butyl, tert.-amyl, isononyl, cyclohexyl, methyl cyclohexyl,



Y represents

where
R^7 is as defined above and R^{11} represents a C_1–C_7-alkyl; a cyclohexyl, a cyclohexenyl; an aryl; or



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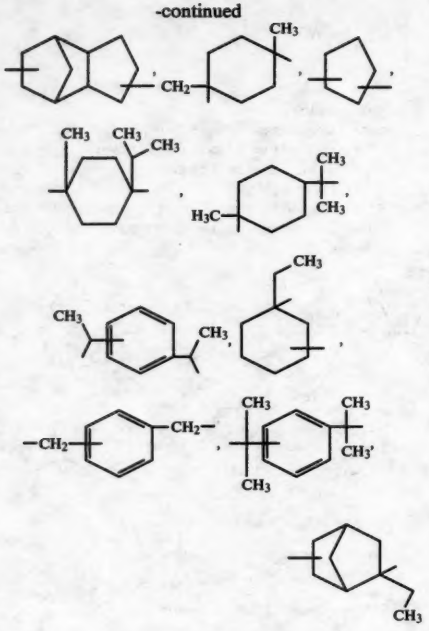


and, up to 60 mole percent may also be —S—, —CH_2—, —CH_2—S—CH_2— or —CH_2—O—CH_2—; and n is an integer of from 1 to 29.

4,565,835

DIISOCYANATE

Richard W. Oertel, III, Guilford; Benjamin W. Tucker, Bethany, and Reinhard H. Richter, North Haven, all of Conn., assignors to The Upjohn Company, Midland, Mich.

Division of Ser. No. 440,565, Nov. 10, 1982, Pat. No. 4,522,762.
This application Mar. 25, 1985, Ser. No. 715,861
Int. Cl.⁴ C08G *18/75*
U.S. Cl. 521—155 **2 Claims**

1. In a polyurethane elastomer prepared by the reaction of an organic diisocyanate, a polymeric diol and a low molecular weight diol extender the improvement which comprises employing 1,4-bis(2-isocyanatoethyl)cyclohexane as the organic diisocyanate.

4,565,836

MULTI-MODAL EMULSIONS OF WATER-SOLUBLE POLYMERS

Richard R. Emerson; Do I. Lee, both of Midland, and James P. Easterly, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 26, 1983, Ser. No. 498,222
Int. Cl.⁴ C08J *3/00*
U.S. Cl. 523—346 **26 Claims**

1. A water-in-oil emulsion polymerization method for preparing polymers of water-soluble monomers which comprises:
(1) preparing a stable water-in-oil emulsion by:
(a) providing an aqueous solution comprising water and at least one water-soluble monomer,
(b) providing an oil solution comprising an inert hydrophobic organic liquid,
(c) mixing a portion of the aqueous solution to the oil solution in an amount sufficient to form an aqueous dispersed phase,
(d) subjecting the mixture to a shear rate at least sufficient to form a portion of said water-in-oil emulsion,
(e) admixing an additional portion of the aqueous solution to the resulting portion of the emulsion previously prepared in amounts sufficient to form an aqueous dispersed phase, and
(f) subjecting the resulting mixture to a shear rate progressively lower than that employed in forming the previous portion of the emulsion,
(g) wherein steps (e) and (f) are performed at least once until said water-in-oil emulsion is formed, and
(2) subjecting the resulting emulsion to polymerization conditions.

4,565,837

RAPID CURING EPOXIDE COMPOSITION EMPLOYING STABLE CARBENIUM SALT CATALYST

Kieran F. Drain, Parma Heights, and David J. Dunn, Twinsburg, both of Ohio, assignors to Loctite Corporation, Newington, Conn.

Filed Nov. 7, 1984, Ser. No. 669,189
Int. Cl.⁴ C08G *59/18, 59/68*
U.S. Cl. 523—400 **15 Claims**

1. A two part composition curable to a solid upon mixing at room temperature comprising:
(I) a first part comprising a di- or polyepoxide compound, and
(II) a second part comprising a trityl or tropylium salt of weak nucleophile anion in a solvent.

4,565,838

CATHODICALLY DEPOSITABLE ELECTRODEPOSITION PAINT BINDERS BASED ON EPOXY RESIN-AMINO ADDUCTS REACTED WITH PHENOL AND FORMALDEHYDE MODIFIED WITH AN UNSATURATED, SUBSTANTIALLY WATER-INSOLUBLE COMPONENT

Willibald Paar, and Wolfgang Daimer, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Mar. 18, 1985, Ser. No. 712,540
Claims priority, application Austria, Oct. 1, 1984, 3096/84
Int. Cl.⁴ C08G *18/80, 59/14;* C09D *3/58, 5/44*
U.S. Cl. 523—414 **29 Claims**

1. Process for producing cathodically depositable electrodeposition paint binders based on modified epoxy resins characterized in that-
(A) 95 to 50% by weight of a reaction product obtained through reaction of
an epoxy resin with at least two epoxy groups and having an epoxy equivalent weight of from about 180 to 1000 at from about 50° to 120° C. with
0.6 to 1.0 moles of primary amino groups on a primary monoalkyl amine or a primary alkylene diamine or a primary-tertiary alkylene diamine per each available epoxy group and
0 to 0.4 moles of a carboxylic compound or a secondary amine per each available epoxy group
to provide an epoxy resin-amino adduct having an epoxy value of substantially zero, said epoxy resin-amino adduct thereafter being reacted at from about 50° to 90° C., calculated on one mole of NH-groups, with
0.5 to 1.0 moles phenol, and with
0.25 to 0.9 moles of formaldehyde per formaldehyde-reactive site, until the formaldehyde is substantially bound and the reaction product, upon partial or total neutralization with acids, is dilutable with water, is mixed with
(B) 5 to 50% by weight of an addition component which is substantially water-insoluble under the conditions of electrodeposition and compatible with the base resin Compo-

nent A, said addition component being selected from the group consisting of

(a) drying oils with an iodine number of above 120;

(b) synthetic esters of the fatty acids with polyols;

(c) addition products of maleic anhydride to hydroxyfree drying oils with an iodine number above 120; synthetic esters of fatty acids with polyols; unsaturated hydrocarbon oligomers or polymers or copolymers with a molecular weight of from about 400 to 3000, the carboxy or anhydride groups of said maleic anhydride having been substantially completely transformed to ester, amide, or imide groups; and

(d) compounds carrying at least two (meth)acrylic or allyl double bonds,

the mixture, after being transformed to the water-dilutable salt by partial neutralization of the basic groups with inorganic or organic acids being dilutable with water.

4,565,839

AQUEOUS EMULSION COMPOSITION

Yasuharu Nakayama, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hyogo, Japan

Division of Ser. No. 220,086, Dec. 24, 1980, Pat. No. 4,465,803. This application May 4, 1984, Ser. No. 606,963

Claims priority, application Japan, Dec. 29, 1979, 54-172054; Feb. 1, 1980, 58-10014

Int. Cl.[4] C08F *2/16*

U.S. Cl. 524—458 **12 Claims**

1. An aqueous emulsion composition which is the product of emulsion polymerization of at least one radical-polymerizable unsaturated monomer in the presence of a water solubilized resin having a graft-polymerizable unsaturated group in the side chain in water or a mixture consisting essentially of water and a water-miscible organic solvent.

4,565,840

FIBER-REINFORCED CONCRETE AND REINFORCING MATERIAL FOR CONCRETE

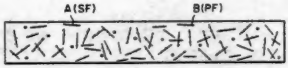
Kazusuke Kobayashi, Sagamihara, and Ryokche Cho, Yokohama, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 223,717, Jan. 9, 1981, abandoned. This application Jun. 11, 1984, Ser. No. 619,344

Claims priority, application Japan, Jan. 11, 1980, 55-2280

Int. Cl.[4] E04C *5/00*

U.S. Cl. 524—8 **16 Claims**



1. A fiber-reinforced, craze-resistant and high tensile strength concrete composite comprising a concrete matrix containing from 1 to 6% by volume of a mixture of short steel fibers (A) having a length of about 20 to 60 mm. and a Young's modulus higher than that of concrete and short polyethylene fibers (B) having a length of about 5 to 100 mm. and a Young's modulus lower than concrete, said fibers (B) further having surface protrusions along the longitudinal axis so that the fiber is firmly adhesive to the concrete matrix, with both of said fibers being dispersed in the concrete matrix in a volume ratio (B)/(A) ranging from about 0.5 to 6, the reinforcing amount of short steel fibers (A) ranging from about 0.5 to about 3% by volume and the reinforcing amount of short polyethylene fibers (B) ranging from about 0.5 to about 5% by volume.

4,565,841

SPIRIT DUPLICATING WITH INDICIA FORMED BY INK COMPRISING DYE MEANS AND SMUDGE-RESISTANT BINDER MEANS SOLUBLE IN SPIRIT DUPLICATING FLUID

Curt Thies, Ballwin, Mo., assignor to The Nimrod Press, Inc., Boston, Mass.

Filed Sep. 10, 1979, Ser. No. 74,060

Int. Cl.[4] C08L *1/18, 3/02;* C09D *11/00*

U.S. Cl. 524—31 **30 Claims**

1. A spirit duplicating master comprising,

a master sheet,

indicia comprising a first significant weight % of dye means soluble in a spirit duplicating fluid comprising water and an organic solvent for producing a visible image on said master sheet and a second significant but lesser than said first significant weight % of binder means consisting essentially of nitrocelloulose and poly(vinyl methyl ether) and soluble in both the water and organic solvent comprising said spirit duplicating fluid for releasably binding said dye means to said master sheet essentially free from smudge while negligibly interfering with transfer of said dye means from said master sheet to a copy sheet moistened with said spirit duplicating fluid,

said indicia being formed by a dry residue of ink comprising said dye means, said binder means and carrier means for carrying said dye means and said binder means in solution,

said dry residue being rich in said dye means and poor in said binder means to facilitate ready transfer of said dye means to a copy sheet from said master sheet,

said dye means and said binder means being soluble in said carrier means.

4,565,842

THERMALLY TRANSFERABLE INK COMPOSITIONS

Robert C. Fitzer, Mahtomedi; Charles J. Fabbrini, and Frank L. Deyak, both of Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 163,884, Jun. 27, 1980, Pat. No. 4,513,107. This application Apr. 18, 1985, Ser. No. 724,605

Int. Cl.[4] C08F *14/06*

U.S. Cl. 524—57 **1 Claim**

1. A thermally transferable ink composition having a 20% elongation temperature of less than about 85° C. and an elongation at break of at least about 15% comprising:

(a) from about 36 to 95% by weight of a thermoplastic polymer selected from the group consisting of polyvinyl chloride, copolymers thereof, and blends, thereof;

(b) from about 50 to 5% by weight of a flexibilizer for said thermoplastic polymer that is compatible with said thermoplastic polymer; and

(c) up to about 40% by weight of a colorant wherein said composition is thermally transferable from a carrier to a receptor at a temperature in the range of 75° C. to 110° C.

4,565,843

LACQUER SOLUTIONS BASED ON HYDANTOIN GROUP-CONTAINING POLYMERS

Willi Dünwald, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 683,033

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347659

Int. Cl.[4] C08L *75/02*

U.S. Cl. 524—89 ***6* Claims**

1. Lacquers for the production of coatings based on hydantoin group-containing polymers prepared by admixing i) from 0.01 to 10%, by weight, based on the solids content, of compounds containing one or more primary, secondary or tertiary amine nitrogens and ii) a solution of hydantoin group-containing polymers.

4,565,844
PROPYLENE-ETHYLENE BLOCK COPOLYMER COMPOSITION

Toshikazu Kasahara, Ichihara; Toshifumi Kajiya, Sodegaura, and Tomio Akiyoshi, Ichihara, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 653,509

Claims priority, application Japan, Oct. 12, 1983, 58-190403

Int. Cl.[4] C08K *3/34, 5/10, 5/15;* **C08L** *23/16*

U.S. Cl. 524—108 **14 Claims**

1. A transparent propylene-ethylene block copolymer composition having low haze comprising (a) from 0.01 to 1.0 part by weight of a nucleating agent and (b) from 0.01 to 3.0 parts by weight of talc having an average particle size of not more than 10 microns, admixed in 100 parts by weight of propylene-ethylene block copolymer; said proylene-ethylene block copolymer having been formed in a multi-stage polymerization process wherein the ethylene content of the copolymer formed at the propylene-ethylene copolymerization stage of said multi-stage polymerization process is from 5 to 40 percent by weight based on the total polymerization amount of the copolymer formed at said propylene-ethylene copolymerization stage.

4,565,845
PROCESS FOR PRODUCING POLYESTER AND BLOCK COPOLYMER THEREOF

Shohei Inoue; Takuzo Aida; Koichi Sanuki, and Masahide Ishikawa, all of Tokyo, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Feb. 27, 1985, Ser. No. 706,181

Claims priority, application Japan, Sep. 5, 1984, 59-185968; Sep. 5, 1984, 59-185969; Sep. 5, 1984, 59-185970

Int. Cl.[4] C08G *63/76*

U.S. Cl. 525—25 **22 Claims**

1. A process for producing a polyester which comprises reacting an acid anhydride with an epoxide using as catalyst an aluminum porphyrin complex and an organic quaternary salt.

6. A process for producing a block copolymer which comprises reacting an acid anhydride with an epoxide using as catalyst an aluminum prophyrin complex and an organic quaternary salt to produce a polyester, and reacting the polyester with an epoxide, an epoxide and an acid anhydride, or an epoxide and a carbon dioxide gas in the presence of the above-mentioned catalyst.

19. A polyester having a molecular weight distribution of 1.0 to 1.5 produced by the process of claim 1.

4,565,846
SELECTIVE GAS-PERMEABLE FILMS

Yukihiro Saito, Kawasaki; Yoshimasa Ito, Machida, and Shiro Asakawa, Zama, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jul. 16, 1982, Ser. No. 398,851

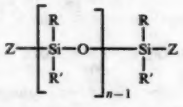
Claims priority, application Japan, Jul. 17, 1981, 56-112456; Jul. 17, 1981, 56-112457; Jul. 17, 1981, 56-112458

Int. Cl.[4] C08L *83/06, 83/08*

U.S. Cl. 525—101 **8 Claims**

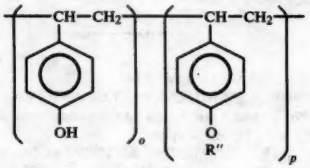
1. A selective gas-permeable film comprising a crosslinked copolymer product of

(1) an α,ω-bifunctional polyorganosiloxane of the general formula



in which each Z represents a halogen atom, a hydroxy group, an alkoxy group, an amino group, a dimethylamino group, a diethylamino group or a dipropylamino group, R and R′ independently represent a hydrogen atom, a methyl group, a phenyl group, a halogenated alkyl group or a vinyl group, and n is an integer from 5 to 200; with a mixture of:

(2) a styrene polymer having an aromatic ring at each side chain thereof and an average molecular weight ranging from 1,000 to 30,000 and selected from the group consisting of poly-p-hydroxystyrene, poly-3,5-dimethyl-4-hydroxy-styrene, poly-p-hydroxystyrene bromide, poly-3-methoxy-4-hydroxystyrene and mixtures thereof, poly-o-hydroxystyrene, poly-p-aminostyrene, polystyrenesulfonic acid, polyvinylbenzoic acid, polyvinylsalicylic acid, poly-2,5-dihydroxystyrene, polyisopropenylphenol, copolymers of the styrene polymers with acrylic esters, etherized derivatives of polyhydroxystyrene which have recurring units of the formula



in which R″ represents $Si(CH_3)_3$ or an alkyl group having 1 to 18 carbon atoms, and o and p are integers sufficient to define the molecular weight range; and

(3) a functional end group-bearing polymer having an average molecular weight of from 1,000 to 10,000 and represented by the general formula

$$HO—R_1—R_2)_iR_1—OH$$

in which each R_1 represents a dihydric phenol residue, R_2 represents a reactive residue capable of condensing with the phenolic hydroxyl groups to form polyester, polyether or polyurethane, and i is an integer from 5 to 50.

4,565,847
BLENDS OF LLDPE, PP AND EPDM OR EPR FOR FILMS OF IMPROVED STIFFNESS, TEAR AND IMPACT STRENGTH

Surinder K. Bahl, West Windsor; Peter J. Canterino, Towaco, and Richard G. Shaw, Bradley Beach, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1984, Ser. No. 568,016

Int. Cl.[4] C08L *23/20, 23/16, 23/12, 23/24*

U.S. Cl. 525—240 **9 Claims**

1. A film of a thermoplastic blend comprising:

60 to 95 weight percent of a linear low density copolymer of ethylene and an olefin having 4 to 10 carbon atoms (LLDPE);

2 to 30 weight percent of polypropylene (PP) or propylene-ethylene copolymer with a high propylene content; and

less than 2 weight percent of an ethylene-propylene-diene terpolymer (EPDM) in an amount sufficient to improve the MD tear strength of the LLDPE/PP blend by at least 10 percent.

4,565,848

PROCESS FOR THE PREPARATION OF POLYACETYLENES BY DEHYDROCHLORINATION OF POLYVINYL CHLORIDE, THE PRODUCTS OBTAINED AND THEIR APPLICATIONS, IN PARTICULAR, AS SEMICONDUCTORS

Daniele Dussoubs; Alain Perichaud, and Louis Savidon, all of Marseilles, France, assignors to Universite d'Aix-Marseille II, Marseilles, France

PCT No. PCT/FR82/00112, § 371 Date Jun. 9, 1982, § 102(e) Date Jun. 9, 1982, PCT Pub. No. WO83/00152, PCT Pub. Date Jan. 20, 1983
PCT Filed Jun. 29, 1982, Ser. No. 478,530
Claims priority, application France, Jun. 30, 1981, 81 13286
Int. Cl.[4] C08F 0/00
U.S. Cl. 525—331.5 17 Claims

1. A process for the dehydrochlorination of polyvinyl chloride with potassium tertiary butoxide in anhydrous tetrahydrofuran medium, characterized in that the number of moles of tertiary butoxide reacted is greater than the number of CH_2CHCl units of polyvinyl chloride, this excess being directly related to the presence of oxygen in the anhydrous tetrahydrofuran and leading to a practically complete dehydrochlorination.

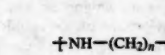
4,565,849

POLYAMIDE ELASTOMER FROM CARBOXY TERMINATED POLYAMIDE AND POLYOXY-2-METHYL-1,3-PROPYLENE DIOL

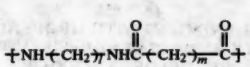
Takeshi Horikawa, and Kenichi Sasaki, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Jul. 11, 1984, Ser. No. 630,509
Claims priority, application Japan, Jul. 25, 1983, 58-135384
Int. Cl.[4] C08L 67/00, 77/00
U.S. Cl. 525—420 12 Claims

1. A process for preparing a polyamide elastomer, which comprises: reacting (I) polyamide-forming component having carboxyl groups at both ends of the molecule and capable of forming polyamide blocks, with (II) polyoxyalkylene glycol component whereby to form the polyamide elastomer, the recurring units of said polyamide block being selected from the group consisting of units of the formula A



wherein n is an integer of 5 to 11, units of the formula B



wherein l is an integer of 6 to 20 and m is an integer of 4 to 20,

and units of both of formula A and formula B, said polyamide blocks having a number average molecular weight of from 400 to 10,000, said polyoxyalkylene glycol component containing at least 10 wt.% of polyoxy-2-methyl-1,3-propylene glycol having a number average molecular weight of 400 to 10,000.

4,565,850

THERMOPLASTIC COMPOSITION CONTAINING NEMATIC OLIGOMER

Dusan C. Prevorsek, Morristown, and Murali K. Akkapeddi, Morris Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 289,619, Aug. 31, 1981, abandoned. This application Mar. 3, 1983, Ser. No. 471,934
Int. Cl.[4] C08L 59/00, 67/02, 77/00, 69/00
U.S. Cl. 525—425 20 Claims

1. A thermoplastic composition comprising:

(a) a thermoplastic polymer of high molecular weight selected from the group consisting of polyesters, polyamides, polycarbonates and polyacetals which has a fusion temperature at a first temperature, has a glass transition temperature and forms an isotropic liquid above the first temperature, and

(b) dispersed in said thermoplastic polymer a polyester oligomer having a melting point at a second temperature, said second temperature being not more than 50° C. less than said first temperature nor more than 70° C. more than said first temperature; said oligomer exhibiting nematic behavior between said second temperature and a third temperature, said third temperature being at least 30° C. above said second temperature and at least about 10° C. above said first temperature; said oligomer having a number average length/diameter ratio (L/D) of between 10 and 50, a glass transition temperature at least 10° C. greater than the glass transition temperature of said polymer and a Small's solubility parameter within 2 of the Small's solubility parameter of said polymer;

the amount of said oligomer being sufficient to raise the modulus value of the thermoplastic composition to at least 110% of the corresponding value of the polymer at the glass transition temperature of said polymer.

4,565,851

CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,295
Int. Cl.[4] C08L 67/02, 67/04
U.S. Cl. 525—437 9 Claims

1. A polymer blend comprising about 5 to 50 percent by weight of a first polyester comprising polyglycolic acid and correspondingly about 50 to 95 percent by weight of a second polyester comprising units derived from a diacid component comprising terephthalic acid and units derived from a diol component which comprises at least one diol containing up to about 8 carbon atoms.

4,565,852

CROSSLINKABLE COMPOSITION COMPRISING AMINOEPOXY RESIN-II

Saiyed B. A. Qaderi, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 566,063
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.[4] C08L 63/00
U.S. Cl. 525—528 37 Claims

1. A crosslinkable composition of matter comprising first and second chain extended diepoxide resins, at least one of which resins is prepared using an excess of diepoxide reactant and modified by reaction with modifying agent comprising hydroxy functional secondary amine in approximately 1:1 epoxy to amine equivalent ratio,

said first resin being substantially gel-free diene functional aminoepoxy resin of number average molecular weight (Mn) about 1000–9000 comprising the reaction product of

diepoxide reactant with first reactants comprising (a) amine functional diene chain extending reactant, and said second resin being substantially gel-free blocked dieneophile functional aminoepoxy resin of number average molecular weight (Mn) about 1000–9000, comprising the reaction product of diepoxide reactant with second reactants comprising (a) amine functional blocked dieneophile chain extending reactant selected from the group consisting of di-secondary amine functional bis-blocked dieneophile, mono-primary amine functional blocked dieneophile, and a compatible mixture of any of them.

4,565,853

COMPOSITIONS FOR FORMING EPOXY ADHESIVE CONTAINING ACRYLATE RUBBER

Eva J. Herscovici, Chappaqua, and Ki-Soo Kim, Katonah, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 19, 1983, Ser. No. 459,071
Int. Cl.⁴ C08L *13/00, 51/08, 63/00*
U.S. Cl. 525—530 **16 Claims**

1. A reaction mixture, for forming a curable epoxy resin composition containing a polyacrylate rubber which comprises an epoxy resin, a monoethylenically unsaturated monomer capable of forming a polyacrylate rubber, an effective amount of a chain transfer agent for the unsaturated monomer to allow for an increased rubber content in the epoxy rubber composition, and a monomer soluble initiator for forming the rubber from the monomer.

4,565,854

POLYMER HAVING THIOL END GROUP

Toshiaki Sato; Junnosuke Yamauchi, both of Kurashiki, and Takuji Okaya, Nagaokakyo, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 22, 1984, Ser. No. 592,476
Claims priority, application Japan, Apr. 7, 1983, 58-61745; Apr. 7, 1983, 58-61746; Apr. 7, 1983, 58-61747; Apr. 8, 1983, 58-62671
Int. Cl.⁴ C08F *2/42*
U.S. Cl. 526—214 **9 Claims**

1. A polymer having a thiol group at one end obtained by polymerizing at least one monomer capable of radical polymerization in contact with a thiolcarboxylic acid represented by the formula R—COSH wherein R is a C_1–C_{18} aliphatic or aromatic hydrocarbon group; and then treating the resulting polymer wtih an alkali or acid.

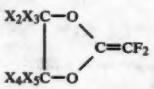
4,565,855

POLYMERS OF DIOXOLANES

Burton C. Anderson; David C. England, and Paul R. Resnick, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 417,697, Sep. 13, 1982, abandoned, which is a division of Ser. No. 306,390, Sep. 28, 1981, Pat. No. 4,429,143. This application Oct. 29, 1984, Ser. No. 665,980
Int. Cl.⁴ C08F *14/18*
U.S. Cl. 526—247 **6 Claims**

1. A polymer of a dioxolane of the formula:



wherein

X_2, X_3, X_4 and X_5, independently, are Cl or F, provided that at least two are F.

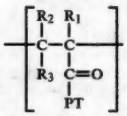
4,565,856

PYRITHIONE-CONTAINING BIOACTIVE POLYMERS AND THEIR USE IN PAINT AND WOOD PRESERVATIVE PRODUCTS

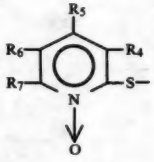
Samuel I. Trotz, Orange, and Theodore H. Fedynyshyn, Branford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 12, 1984, Ser. No. 660,208
Int. Cl.⁴ C08F *26/06*
U.S. Cl. 526—265 **8 Claims**

1. A bioactive polymer comprising an effective biocidal amount of moieties derived from pyrithione and having the formula



wherein R_1, R_2 and R_3 are individually selected from hydrogen and alkyl groups having from 1 to 4 carbon atoms; and PT represents the pyrithione moiety which is defined as



wherein R_4, R_5, R_6 and R_7 are individually selected from hydrogen and, a lower alkyl group having from 1 to about 8 carbon atoms, a lower alkoxy group having from 1 to about 8 carbon atoms, a nitro group and a halo group.

4,565,857

RADIATION-CURABLE CELLULOSE COATING

Richard J. Grant, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 21, 1984, Ser. No. 673,872
Int. Cl.⁴ C08G *18/06, 18/28;* C08L *1/10;* C09D *3/72*
U.S. Cl. 527—301 **18 Claims**

1. Ethylenically unsaturated cellulose ester comprising the reaction product of (a) a cellulose ester of cellulose and saturated aliphatic monocarboxylic acids having 2 to 4 carbon atoms or aromatic monocarboxylic acids, said cellulose ester having an average of about 0.1 to 2.0 unreacted hydroxyl groups per anhydroglucose unit, and (b) a polymerizable ethylenically unsaturated compound having an isocyanato group reactive with the hydroxyl groups of the cellulose ester, said reaction product being substantially free of unreacted isocyanate groups.

4,565,858

POLYETHERIMIDES WITH HIGH THERMAL STABILITY AND SOLVENT RESISTANCE AND PRECURSORS THEREFOR

Howard J. Klopfer, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,262
Int. Cl.⁴ C08G *73/10*
U.S. Cl. 528—172 **11 Claims**

1. A polymer consisting essentially of structural units having formula I in the drawings, wherein:

in each instance, X is OH and Y is NH, or X and Y taken together are N;

each A has formula II or III, at least about 50% of the A moieties in said polymer having formula II; and

each R has formula IV, V or VI, at least about 5% of the R moieties in said polymer having formula VI.

4,565,859

POLYETHER COMPOUNDS, EPOXY RESINS, EPOXY RESIN COMPOSITIONS, AND PROCESSES FOR PRODUCTION THEREOF

Takaaki Murai; Shoji Watanabe; Kimio Inoue, and Toyokazu Yagii, all of Hiroshima, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

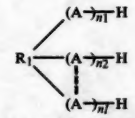
Filed Jan. 29, 1985, Ser. No. 696,239

Claims priority, application Japan, Jan. 30, 1984, 59-14859; Jan. 30, 1984, 59-14860; Feb. 16, 1984, 59-27693

Int. Cl.[4] C08G *59/42*

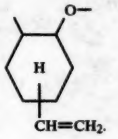
U.S. Cl. 528—365 15 Claims

1. A polyether compound having ether groups and vinyl double bonds represented by formula (I)



(I)

wherein R_1 represents a residue of an organic compound having l active hydrogen atoms, n_1 through n_l each represents 0 or an integer of from 1 to 100, the sum of the integers represented by n_1 through n_l is from 1 to 100, and l represents an integer of from 1 to 100, and A represents



4,565,860

POLYMER OF TRIPHENYLAMINE

Yasuyuki Murofushi, Yokohama; Masazumi Ishikawa, Yokosuka, and Mikio Kawai, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 3, 1985, Ser. No. 719,461

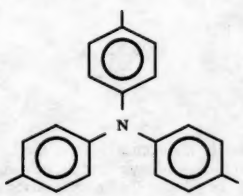
Claims priority, application Japan, Apr. 9, 1984, 59-68986; Apr. 9, 1984, 59-68987; Jul. 18, 1984, 59-148868

Int. Cl.[4] C08G *73/02*

U.S. Cl. 528—422 7 Claims

1. A polymer comprising structural units represented by the formula (I):

(I)



4,565,861

SERIRUBICUM

Hamao Umezawa; Tomio Takeuchi; Masa Hamada; Hiroshi Naganawa, all of Tokyo; Tsutomu Sawa, Ayase; Takeshi Uchida, Yokohama, and Masaya Imoto, Urawa, all of Japan, assignors to Microbial Chemistry Research Foundation, Tokyo, Japan

Filed Jan. 3, 1984, Ser. No. 567,792

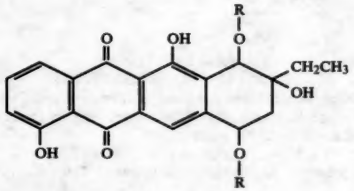
Claims priority, application Japan, Feb. 8, 1983, 58-19341

The portion of the term of this patent subsequent to Oct. 29, 2002, has been disclaimed.

Int. Cl.[4] C07H *15/24*

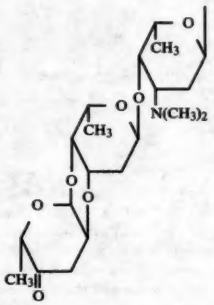
U.S. Cl. 536—6.4 1 Claim

1. An anthracycline compound, serirubicin, of the formula (1):



(I)

wherein R represents the substituent:



or an acid addition salt of the serirubicin.

4,565,862

ETHERS OF ANTIBIOTIC X-14868A

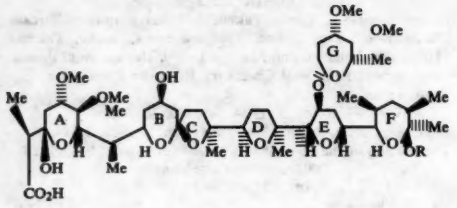
Louise H. Foley, Durham, N.H.; Lilian H. Sello, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 444,958, Nov. 29, 1982, abandoned. This application Oct. 24, 1983, Ser. No. 530,187

Int. Cl.[4] C07H *17/04*; A61K *31/71*

U.S. Cl. 536—16.8 8 Claims

1. A compound of the formula:



wherein R is lower alkyl hydroxy and the pharmaceutically acceptable salts thereof.

4,565,863

RETINOID CARBOHYDRATES

Werner Bollag, Basel; Hans J. Mayer, Füllinsdorf, and Pierre-Charles Wyss, Muttenz, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

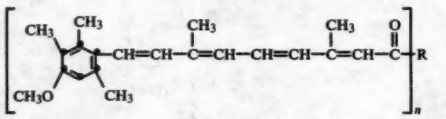
Filed Dec. 3, 1984, Ser. No. 677,441

Claims priority, application Switzerland, Dec. 8, 1983, 6570/83

Int. Cl.[4] C07H *13/02*

U.S. Cl. 536—18.2 **23 Claims**

1. A retinoid of the formula:



wherein n is 1 or 2; R is XR_1; X is —O—, —NH— or $—NH(CH_2)_m—O—$; m is an integer of from 2 to 6; and R_1 is a residue obtained by removal of a hydroxy group from a member selected from the group consisting of a sugar, an aminosugar, a deoxyaminosugar, deoxysugar, loweralkyl glycosides thereof, derivatives thereof wherein one or more of the hydroxy or amino groups contained therein are acylated with a lower alkanoyl, derivatives thereof wherein at least two of the hydroxy groups contained therein are acetalized and derivatives thereof where the free $—CH_2OH$ group is oxidized to a —COOH group; with said sugars being mono- or di-saccharides of pentoses or hexoses.

4,565,864

SUBSTITUTED IMIDAZO[1,2-C]PYRIMIDINES

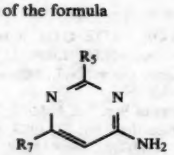
James J. Wade, Oakdale, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 500,410, Jun. 2, 1983, Pat. No. 4,503,050. This application Dec. 17, 1984, Ser. No. 682,663

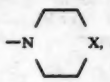
Int. Cl.[4] C07D *417/04, 403/04*

U.S. Cl. 544—58.2 **2 Claims**

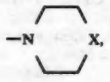
1. A compound of the formula



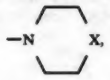
wherein R_5 is hydrogen, lower alkyl, phenyl or



wherein X is sulfur, sulfonyl, imido or N-alkylimido; and R_7 is halogen or



wherein X is sulfur, sullfonyl, imido or N-alkylimido; with the proviso that one and only one of R_5 and R_7 is



wherein X is as defined above.

4,565,865

PHOSPHOLIPID CARBAMATES

Motoo Hozumi, Omiya; Hiroaki Nomura, Takatsuki, and Yoshio Yoshioka, Kitakatsuragi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

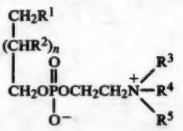
Division of Ser. No. 237,970, Feb. 25, 1981, Pat. No. 4,408,052. This application Jul. 14, 1983, Ser. No. 513,617

Claims priority, application Japan, Feb. 27, 1980, 55-24333; Oct. 14, 1980, 55-143980

Int. Cl.[4] C07F *9/65, 9/10*; C07C *49/66*

U.S. Cl. 544—110 **14 Claims**

1. A compound of the formula



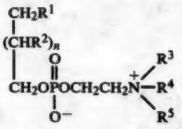
wherein n is 0 or 1;

R^1 represents —OCONHR[6] in which R[6] is C_{8-26} alkyl, C_{8-26} alkenyl, C_{8-26} alkynyl, 15-(4-n-butylphenoxy)pentadecyl, ω-p-tolylheptadecyl or 9-(2,3-dimethoxy-5-methyl-1,4-benzoquinon-6-yl)nonyl;

R^2 represents —H or $—OCH_3$; and

R^3, R^4 and R^5 independently hydrogen or C_{1-3} alkyl, or a pharmaceutically acceptable salt thereof.

11. A compound of the formula



wherein

n is 0 or 1;

R^1 represents —OCONHR[6] in which R[6] is C_{8-26} alkyl, C_{8-26} alkenyl, C_{8-26} alkynyl, 15-(4-n-butylphenoxy)-pentadecyl, ω-p-tolylheptadecyl or 9-(2,3-dimethoxy-5-methyl-1,4-benzoquinon-6-yl)nonyl;

R^2 represents —H or —OCH_3; and

represents oxazolio, N—C_{1-4} alkylpiperazinio or N—C_{1-4} alkylmorpholinio,
or a pharmaceutically acceptable salt thereof.

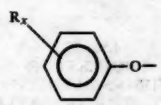
4,565,866

METHOD FOR THE PREPARATION OF FORMAMIDES

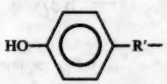
Roger G. Duranleau, Georgetown; John F. Knifton, and George P. Speranza, both of Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 24, 1984, Ser. No. 573,443
Int. Cl.[4] C07C *102/00*; C07D *265/30, 241/04*
U.S. Cl. 544—176 17 Claims

1. In a process for the preparation of formamide and N-substituted formamides in which ammonia, a primary or a secondary amine is reacted with carbon monoxide at an elevated temperature and pressure, the improvement which comprises conducting said reaction in the presence of a mixture consisting of a phenol and a phenate salt from the group consisting of an alkali metal phenate and an alkaline earth metal phenate, said phenol and said phenate salt each having the radical:



wherein R is selected from the group consisting of an alkyl radical having from 3 to 18 carbon atoms and a hydroxyaryl radical having the formula:



in which R′ is a alkylene radical having from 2 to 5 carbon atoms and in which x has a value of 1 to 2 when R is said alkyl radical and x has a value of 1 when R is said hydroxyaryl radical.

4,565,867

ANHYDROUS HIGH-PRESSURE MELAMINE SYNTHESIS

Roger E. Thomas, Baton Rouge, and David E. Best, Prairieville, both of La., assignors to Melamine Chemicals, Inc., Donaldsonville, La.

Continuation of Ser. No. 568,408, Jan. 5, 1984, abandoned. This application Jan. 9, 1985, Ser. No. 689,921
Int. Cl.[4] C07D *251/60*
U.S. Cl. 544—201 16 Claims

1. A continuous process for producing melamine from urea comprising pyrolyzing urea in a reactor at a pressure at from about 1500 to 2500 psig and at a temperature at from about 670° to 800° F. to produce a reaction product containing liquid melamine, CO_2 and NH_3; transferring, under pressure, said reaction product as a mixed stream to a separator unit; maintaining said separator unit at substantially the same pressure and temperature as said reactor; separating said reaction product in said separator unit into CO_2 and NH_3 offgases containing melamine vapors and liquid melamine; simultaneously transferring

(a) said CO_2 and NH_3 offgases containing melamine at a temperature and pressure substantially the same as said temperature and pressure of said separator unit to a scrubber unit and scrubbing said off-gases with molten urea to preheat said urea and cool said offgases and remove therefrom said melamine, and thereafter removing NH_3 and CO_2 gases from said scrubber unit at a temperature of from about 350° to about 450° F. and feeding said preheated molten urea containing said melamine to said reactor, and

(b) said liquid melamine to a product cooling unit;

and depressurizing and quenching said liquid melamine with a liquid medium which will form a gas at the temperature of said liquid melamine in said product cooling unit to produce a commercially useful solid melamine product, without washing or further purification.

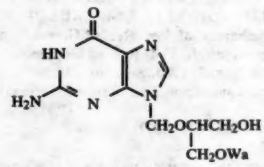
4,565,868

PROCESS FOR PREPARING GUANINE DERIVATIVES

Julien P. H. Verheyden, Los Altos, and John C. Martin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

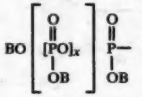
Continuation-in-part of Ser. No. 464,274, Feb. 7, 1983, which is a continuation-in-part of Ser. No. 431,933, Sep. 30, 1982. This application Sep. 29, 1983, Ser. No. 537,237
Int. Cl.[4] C07D *473/18*; A61K *31/52*
U.S. Cl. 544—276 18 Claims

1. A process for preparing a compound of the formula

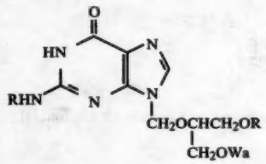


(I)

wherein Wa is



wherein each B is independently hydrogen or a pharmaceutically acceptable counterion, which process comprises contacting a solution of a compound of the formula



(XIV)

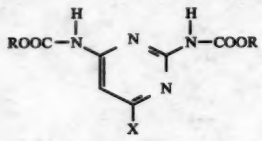
wherein R is benzoyl or a triphenylmethyl group and Wa is as defined above with an acid or a base for a time sufficient to form compound of formula (I).

4,565,869
DICARBAMATES

Marquard Imfeld, Oberwil; Henri Ramuz, Birsfelden; Peter Vogt, Aesch, all of Switzerland, and Jean-Claude Muller, Morsang-sur-Orge, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 7, 1983, Ser. No. 472,696
Claims priority, application Switzerland, Mar. 16, 1982, 1639/82
Int. Cl.[4] C07D *239/48*
U.S. Cl. 544—323 4 Claims

1. Dicarbamates of the formula



I

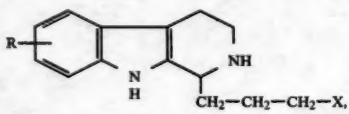
wherein R represents a member of the group consisting of lower alkyl and (lower alkyloxy)-(lower alkyl), and X represents a halogen atom or a sulfonic acid group.

4,565,870
PROCESS FOR THE PREPARATION OF A SALT OF 1-(γ-HALOPROPYL)-1,2,3,4-β-CARBOLINES

Rudolf Kropp, Limburgerhof, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

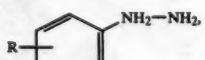
Filed Aug. 2, 1983, Ser. No. 519,508
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1982, 3229215
Int. Cl.[4] C07D *471/04*
U.S. Cl. 546—85 5 Claims

1. A process for the preparation of a salt of a compound of the formula I



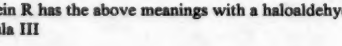
I

where R is hydrogen, halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, CF_3 and X is halogen which comprises: reacting a phenylhydrazine of the formula V



V

wherein R has the above meanings with a haloaldehyde of the formula III



III,

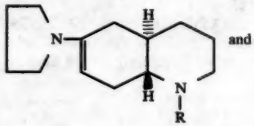
where X is halogen at a temperature of from about 50° to 150° C., and thereafter isolating the salt of the compound I.

4,565,871
1-ALKYL-6-PYRROLIDINO-OCTAHYDROQUINOLINES

Cynthia L. Nicholas; Edmund C. Kornfeld, and John M. Schaus, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

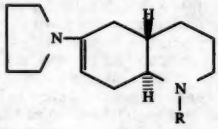
Division of Ser. No. 535,518, Sep. 26, 1983, Pat. No. 4,507,478. This application Dec. 11, 1984, Ser. No. 679,730
Int. Cl.[4] C07D *401/04*
U.S. Cl. 546—165 2 Claims

1. A trans-(±) racemate composed of enantiomers of the formulas



I

and



wherein R is C_1–C_3 alkyl or allyl.

4,565,872
PROCESS FOR 8-CYANO-6,7-DIHYDRO-5-METHYL-1-OXO-1H,5H-BENZO[IJ]QUINOLIZINE-2-CARBOXYLIC ACIDS AND INTERMEDIATES THEREOF

Charles M. Leir, New Richmond, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation of Ser. No. 386,196, Jun. 7, 1982, abandoned. This application Oct. 26, 1983, Ser. No. 545,595
Int. Cl.[4] C07D *215/48*
U.S. Cl. 546—176 2 Claims

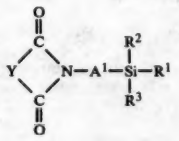
1. A compound selected from the group consisting of 5-cyanoquinaldine and 5-cyano-6-fluoroquinaldine.

4,565,873
SILANES CONTAINING IMIDE GROUPS

Dieter Lohmann, Muttenz, and Siegfried Wyler, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 419,386, Sep. 17, 1982, abandoned, which is a continuation of Ser. No. 216,220, Dec. 15, 1980, abandoned, which is a division of Ser. No. 67,864, Aug. 20, 1979, Pat. No. 4,271,074. This application Feb. 24, 1984, Ser. No. 583,453
Int. Cl.[4] C07D *231/00*
U.S. Cl. 548—110 2 Claims

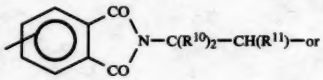
1. A compound of the formula XIX

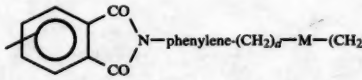


(XIX)

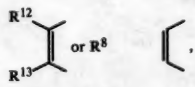
in which R^1 and R^2 independently of one another are methyl, ethyl, phenyl, vinyl, chlorine or a group —OR, R^3 is chlorine or —OR, R is alkyl having 1–10 C atoms, cycloalkyl having 5–8 C atoms or phenyl, A^1 is one of the divalent radicals $—(CH_2)_a—$, $—C(R^{10})_2—CH{=}C(R^{11})—$, $—C(R^{10})_2—CH(R^1$-

1)—, —$(CH_2)_b$—G—$(CH_2)_c$—, phenylene—$(CH_2)_d$—G—$(CH_2)_c$—, phenylene—$(CH_2)_d$—,

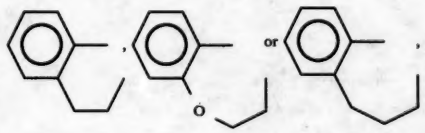




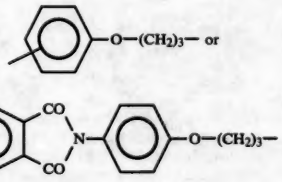
and in these divalent radicals A the bond to the Si atom is in each case effected via the bond on the right-hand side, R^{10} is hydrogen, methyl or ethyl, R^{11} is hydrogen or alkyl having 1 to 10 C atoms, a is a number from 1 to 10, b and c independently of one another are a number from 1 to 6, d is a number from 0 to 6, G is —$CH(R^{11})$—, —NH—, —$N(R^{11})$—, —O— or phenylene and M is —O—, —NH— or —$N(R^{11})$—, and in which Y is



R^{12} is hydrogen, methyl, phenyl, —CN or halogen, R^{13} is methyl, phenyl, —CN or halogen and R^8 is alkylene having 3 or 4 C atoms, which can be branched, or R^8 is one of the radicals



with the proviso that A^1 cannot be



if R^{12} and R^{13} are each methyl.

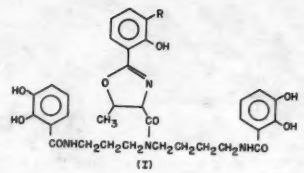
4,565,874

SYNTHESIS OF PARABACTIN AND HOMOLOGS THEREOF

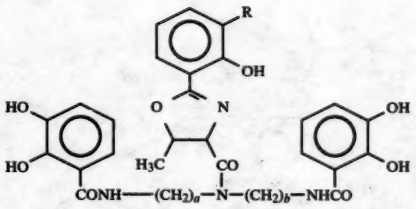
Raymond J. Bergeron, Jr., Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed Aug. 5, 1982, Ser. No. 405,693
Int. Cl.[4] C07D *233/24*
U.S. Cl. 548—239 **18 Claims**

1. A method for the preparation of a compound having the structural formula:



(I)



(I)

wherein R is H or OH,
a is 3 or 4, and
b is 3 or 4
comprising the sequential steps:

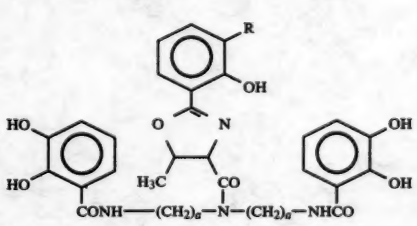
(a) reacting N,N-bis(2,3-dimethoxybenzoyl)-spermidine, -homospermidine or -norspermidine with N-Z-L-, D- or DL-threonine, wherein Z is a nitrogen protective group, to produce N'-(N-Z-L-, D- or DL-threonyl)-N,N-bis(2,3-dimethoxybenzoyl)-spermidine, -homospermidine or -norspermidine;

(b) removing said nitrogen protective group, Z, from said threonyl moiety to produce N'-(L-, D- or DL-threonyl)-N,N-bis(2,3-dimethoxybenzoyl)-spermidine, -homospermidine or -norspermidine;

(c) demethylating the ether product of step (b) to produce N'-(L-, D- or DL-threonyl)-N,N-bis(2,3-dihydroxybenzoyl)-spermidine, -homospermidine or -norspermidine;

(d) coupling the product of step (c) with 2-hydroxybenziminoethyl ether or 2,3-dihydroxybenziminoethyl ether to produce compound (I).

16. A compound having the structural formula:



wherein R is H or OH, and
a is 3 or 4.

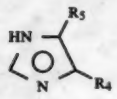
4,565,875

IMIDAZOLE PLANT GROWTH REGULATORS

Patricia L. Cavender, Princeton Junction, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jun. 27, 1984, Ser. No. 625,056
Int. Cl.[4] C07D *233/90*
U.S. Cl. 548—336 **21 Claims**

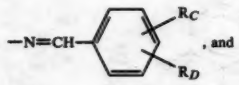
1. Plant growth regulating substituted imidazoles of the formula



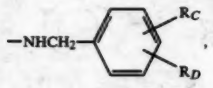
wherein

R_4 is selected from the group consisting of —H, —lower alkyl, —CN, and —CONHZ; and

R_5 is selected from the group consisting of —$NZCOR_A$, —$CONZR_B$,



, and



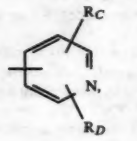
provided R_4 is —CN;

in which

Z is selected from the group consisting of —H and —lower alkyl;

R_A is selected from the group consisting of —straight or branched (C_2–C_8) alkyl provided R_4 is other than —CONHZ,

,



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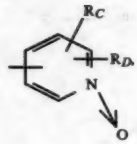

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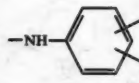


,

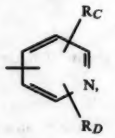
, and

,

provided R_4, R_C and R_D are other than —H or —lower alkyl;

R_B is selected from the group consisting of —straight or branched alkyl, provided R_4 is other than —CN, —H or —lower alkyl,

,



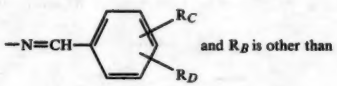
,

, and

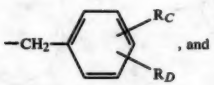
,

provided R_4 is other than —H or —lower alkyl;

R_C is selected from the group consisting of —H provided R_5 is other than



and R_B is other than



, and

and —halogen; and

R_D is selected from the group consisting of —H, —lower alkyl, —lower alkoxyl, —halogen, and —CF_3.

4,565,876

PROCESS

Alain Jouquey, Paris, and Peter F. Hunt, Gonesse, both of France, assignors to Roussel Uclaf, Paris, France

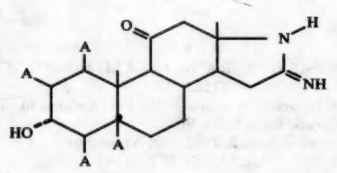
Filed May 21, 1984, Ser. No. 612,606

Claims priority, application France, Jun. 20, 1983, 83 10141

Int. Cl.[4] C07D *209/56*

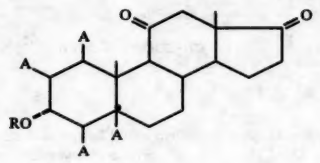
U.S. Cl. 548—426 **6 Claims**

1. A process for the preparation of a 16-imino-17-aza-steroid of the formula



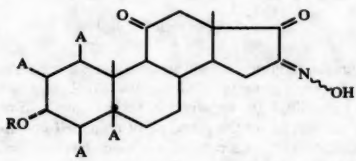
I

wherein A is selected from the group consisting of hydrogen and tritium comprises reacting a compound of the formula



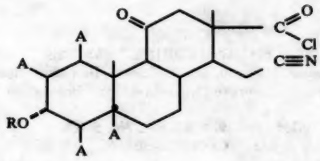
II

wherein A has the above definition and R is an acyl of an alkanoic acid of 1 to 8 carbon atoms with an alkyl nitrite to obtain a compound of the formula



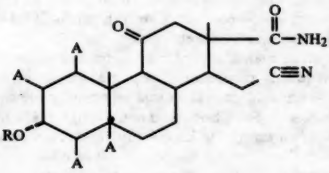
III

reacting the latter with a chlorinating agent to form an acid chloride to obtain a compound of the formula



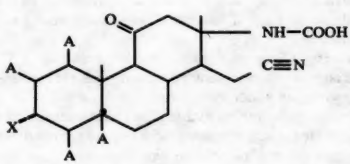
IV

reacting the latter with ammonia to obtain a compound of the formula



V

reacting the latter with an alkali metal hypohalite in the presence of a base to obtain a compound of the formula



VI

wherein A has the above definition and X is a halogen and reacting the latter with a base to obtain the desired compound of formula I.

4,565,877

NAPHTHALENE DERIVATIVES AND METHOD FOR PREPARATION THEREOF

Hiroshi Wada, Omiya; Kazuhiro Ishii, Nara; Nobuchika Tsumagari, Habikino; Masaaki Matsuo, Kyoto, and Mikio Matsumoto, Settsu, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

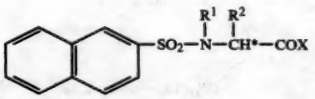
Filed Oct. 11, 1983, Ser. No. 540,414

Claims priority, application Japan, Oct. 21, 1982, 57-185884

Int. Cl.[4] C07C *53/42;* **C07D** *205/04, 207/48, 211/96*

U.S. Cl. 548—530 **6 Claims**

1. An optically active naphthalene derivative of the formula:



[I]

wherein R^1 is hydrogen and R^2 is lower alkyl or phenyl-lower alkyl; or R^1 and R^2 are combined together to form alkylene of 2–4carbons; X is halogen; and the absolute configuration at the asymmetric carbon atom shown by the asterisk is either (S)- or (R)-configuration.

4,565,878

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

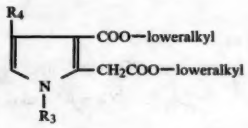
Michael J. Dagani, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 4, 1980, Ser. No. 137,231

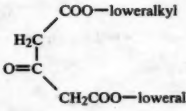
Int. Cl.[4] C07D *207/34*

U.S. Cl. 548—531 **4 Claims**

1. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:

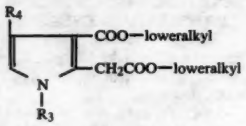


by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:

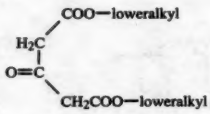


and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, wherein the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added water-immiscible co-solvent in which said diloweralkyl acetone dicarboxylate is soluble and which can extract said loweralkylamine from the aqueous phase at a rate so that the exothermic reaction is moderated and the product remains in solution, said added co-solvent being a chlorinated or brominated aliphatic or aromatic hydrocarbon compound having a boiling point from about 30 to about 200° C.

4. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:



by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:



and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, where in the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added co-solvent which is a chlorinated or brominated aliphatic or aromatic hydrocarbon compound having a boiling point from about 30° to about 200° C.

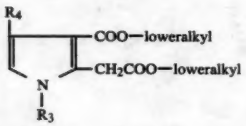
4,565,879

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

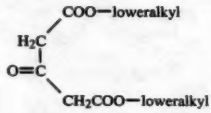
James T. F. Kao, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 4, 1980, Ser. No. 137,250
Int. Cl.[4] C07D *207/34*
U.S. Cl. 548—531 **4 Claims**

1. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:

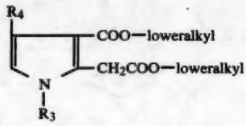


by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:

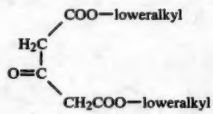


and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, wherein the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added co-solvent in which said diloweralkyl acetone dicarboxylate is soluble and which can extract said loweralkylamine from the aqueous phase at a rate so that the exothermic reaction is moderated and the product remains in solution, said co-solvent being an aromatic hydrocarbon compound having a boiling point in the range of from about 75° to 150° C.

4. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:



by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:



and an aqueous solution of a loweralkylamine of the formula: R_3NH_2, where in the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement comprising said reacting being carried out in the presence of an added co-solvent which is an aromatic hydrocarbon compound having a boiling point in the range of from about 75° to about 150° C.

4,565,880

MALEIC ANHYDRIDE PROCESS

Bruno J. Barone, Houston, and William G. Bowman, Dickinson, both of Tex., assignors to Denka Chemical Corporation, Houston, Tex.

Filed Jun. 29, 1983, Ser. No. 508,870
Int. Cl.[4] C07D *307/60*
U.S. Cl. 549—256 **20 Claims**

1. In the process of producing maleic anhydride comprising:

(a) oxidizing a hydrocarbon which is a precursor of maleic anhydride to form a reactor effluent comprising maleic anhydride,

(b) scrubbing the reactor effluent with water to obtain a crude aqueous composition comprising maleic acid and up to 10 ppm of an alkali metal, and

(c) recovering maleic anhydride by fractionation of said crude aqueous composition wherein the improvement comprises having present in said aqueous composition, a combination of phosphoric acid in the range of 100 to 2000 ppm and in a ratio of at least 9 equivalent acid groups of phosphoric acid per atomic equivalent of alkali metal ion present and from 10 to 150 ppm phenothiazine, methyl-p-benzoquinone, or a mixture thereof whereby the loss of said maleic anhydride is reduced.

17. In the process of producing maleic anhydride comprising:

(a) oxidizing a hydrocarbon which is a precursor of maleic anhydride to form a reactor effluent comprising maleic anhydride,

(b) scrubbing the reactor effluent with water to obtain a crude aqueous composition comprising maleic acid and up to 5 ppm of an alkali metal, and

(c) recovering maleic anhydride by fractionation of said crude aqueous composition wherein the improvement comprises having present in said aqueous composition, phosphoric acid in the range of 100 to 2000 ppm and in a ratio of 15 to 156 equivalent acid groups of phosphoric acid per atomic equivalent of alkali metal ion present whereby the loss of said maleic anhydride is reduced.

4,565,881
LIQUID CRYSTAL SUBSTITUTED 1,3-DIOXANES AND MIXTURES CONTAINING THEM

Dietrich Demus; Horst Zaschke, both of Halle; Hans-Matthias Vorbrodt, Quedlinburg; Horst Kresse, and Wolfgang Weissflog, both of Halle, all of German Democratic Rep., assignors to Veb Werk für Fernsehdektronik im Veb Kombinat Mikroelektronik, Berlin, Fed. Rep. of Germany

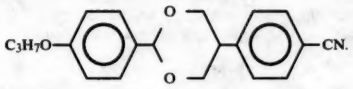
Continuation-in-part of Ser. No. 102,944, Dec. 12, 1979, Pat. No. 4,348,324. This application Aug. 6, 1982, Ser. No. 405,677

Claims priority, application German Democratic Rep., Dec. 13, 1978, 209708; Dec. 13, 1978, 209707

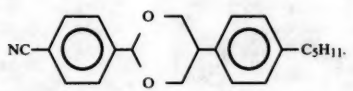
Int. Cl.[4] C07D *319/06*

U.S. Cl. 549—373 **4 Claims**

1. The compound



2. The compound



4,565,882
SUBSTITUTED DIHYDROBENZOPYRAN-2-CARBOXYLATES

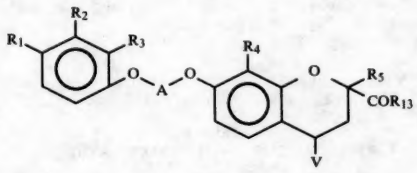
Masateru Miyano, Northbrook, and Robert L. Shone, Palatine, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jan. 6, 1984, Ser. No. 568,846

Int. Cl.[4] C07D *311/04*

U.S. Cl. 549—399 **17 Claims**

1. Compounds of the formula:



wherein A is a methylene chain having 1 to 10 carbon atoms inclusive, optionally substituted by hydroxy;
wherein V is:
(a) hydrogen;
(b) hydroxy; or
(c) R_6CH_2O—;
wherein R_1 is:
(a) —$COOH_3$;
(b) —$CHOHCH_3$;
(c) —C_2H_5;
(d) -hydrogen; or
(e) —$CO_2C_2H_5$
wherein R_2 is:
(a) -hydrogen;
(b) —OH; or
(c) $R_{12}CH_2CO_2$—;
wherein R_3, R_4, R_6, R_7, R_8, R_9, R_{10}, R_{11} and R_{12} each of which may be the same or different, are:
(a) hydrogen;
(b) lower-alkyl having 1–6 carbon atoms inclusive; or
(c) allyl;
wherein R_5 is:
(a) hydrogen; or
(b) $R_7CH_2C(O)$—;
wherein R_{13} is hydrogen, hydroxy, alkoxy of 1 to 6 carbon atoms inclusive, or —OM wherein M is an alkali metal, alkyl of 1 to 6 carbon atoms, inclusive, or $NR_8{\oplus}R_9R_{10}R_{11}$, or $HNR_8{\oplus}R_9R_{10}$, or the pharmacologically acceptable addition salts thereof.

4,565,883
CYANOACRYLATE ADHESIVE COMPOSITION

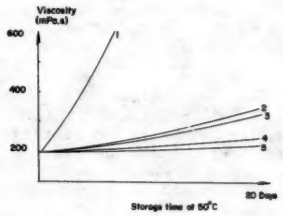
Heinz Sieger, Eppelheim, and Heinz Tomaschek, Heidelberg, both of Fed. Rep. of Germany, assignors to Teroson GmbH, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,725

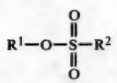
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239776

Int. Cl.[4] C07D *307/12;* **C07C** *121/30, 121/46, 121/70*

U.S. Cl. 549—475 **9 Claims**



1. An alpha-cyanoacrylate composition containing as stabilizer a stabilizing amount of one or more sulfonic acid derivatives of the formula:



(I)

in which R^1 stands for a trimethylsilyl group $Si(CH_3)_3$, R^2 is a halogen atom, a straight or branched-chain alkyl group having 1 to 10 carbon atoms, a perfluoroalkyl group having 1 to 10 carbon atoms, a phenyl group or a tolyl group.

4,565,884
BIS-PLATINUM COMPLEXES AS ANTITUMOR AGENTS

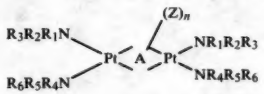
Peter J. Andrulis, Jr., Washington, D.C., and Paul Schwartz, Rockville, Md., assignors to Andrulis Research Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 493,177, May 10, 1983, abandoned. This application May 10, 1984, Ser. No. 608,743

Int. Cl.[4] C07F *15/00*

U.S. Cl. 556—137 **20 Claims**

1. A bis-platinum complex having the formula



wherein A is a ligand having two pairs of platinum-coordinating acidic groups which are each independently a carboxylate, phenolate, sulfonate or phosphonate group, each said pair being capable of coordinating with a platinum ion to form a 5–10 membered chelate ring; Z is a water-solubilizing group; n is 0 or a positive integer, with the proviso that n is 0 only when at least one of said platinum-coordinating acidic groups is

sulfonate or phosphonate, or when at least one platinum ion is a Pt(IV) ion; and R_1, R_2, R_3, R_4, R_5 and R_6 are each independently H or a C_{1-20} alkyl, aryl, aralkyl or alkaryl group, or together form one or more C_{1-30} alkylene, cycloalkylene, arylene, aralkylene or alkarylene groups;
or a pharmaceutically acceptable salt thereof.

4,565,885

METHOD FOR PREPARING OLEFINIC SILAZANES

Jimmy L. Webb, Ballston Lake, and Cathryn E. Olsen, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 12, 1985, Ser. No. 743,836
Int. Cl.[4] C07F *7/10*
U.S. Cl. 556—410 **14 Claims**

1. A method for preparing a composition comprising an olefinic silazane of formula I in the drawings, wherein R^1 and each R^2 is independently a C_{1-4} primary or secondary alkyl radical, phenyl or substituted phenyl and m is from 1 to about 20, which comprises reacting an olefinic amine of formula II with a silazane of formula III, wherein R^3 is hydrogen or methyl and n is 1 or 2, with removal of the highly volatile amino compound $(R^3)_{3-n}NH_n$.

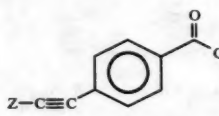
4,565,886

ETHYNYL AND SUBSTITUTED ETHYNYL-TERMINATED POLYSULFONES

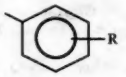
Paul M. Hergenrother, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 433,598, Oct. 8, 1982, Pat. No. 4,431,761. This application Aug. 30, 1983, Ser. No. 527,914
Int. Cl.[4] C07F *7/08, 7/18*; C07C *13/00, 15/00*
U.S. Cl. 556—436 **2 Claims**

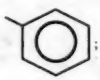
1. A process for preparing the substituted 4-ethynylbenzoyl chloride of the formula



where Z is selected from the group consisting of $Si(CH_3)_3$; H; straight or branched alkyl groups having from 1 to 10 carbon atoms; substituted aromatic groups of the formula



where R is selected from the group including straight or branched alkyl groups having from 1 to 12 carbon atoms, H, and



and halogenated derivatives of all of the above, comprising the steps of:

stirring, a catalytic amount of dichlorobis(triphenbylphosphine)palladium, and at least a stoichiometric amount of a substituted acetylene in an organic base under an inert atmosphere at 70°–74° C. for five to seven hours,

precipitating the substituted 4-ethynylbenzoic acid with cold dilute aqueous acid (10°–20° C.), and purifying the precipitate by recrystallization from toluene,

stirring the precipitate in thionyl chloride with a small amount of N,N-dimethylformamide added at ambient temperature for 8–20 hours, and

concentrating the solution to dryness at temperatures <40° C. in vacuo to yield the substituted 4-ethynylbenzoyl chloride which may be purified by recrystallization from n-hexane or by sublimation.

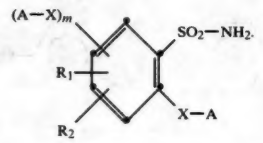
4,565,887

N-PHENYLSULFONAMIDES

Werner Föry, Basel; Karl Gass, Magden; Willy Meyer, Riehen, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Division of Ser. No. 396,959, Jul. 9, 1982, Pat. No. 4,443,243. This application Jan. 19, 1984, Ser. No. 571,986
Claims priority, application Switzerland, Jul. 16, 1981, 4667/81
Int. Cl.[4] C07C *143/78, 149/447*
U.S. Cl. 564—85 **10 Claims**

1. A phenylsulfonamide of the formula II



wherein

A is a C_3–C_6 alkynyl group,

X is oxygen, sulfur or a sulfinyl or sulfonyl bridge,

m is the number zero or one,

R_1 is hydrogen, halogen, C_1–C_5-alkyl or C_2–C_5-alkenyl or a group —Y—R_5,

R_2 is hydrogen, halogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_1–C_4-haloalkyl, or a group —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8,

R_5 and R_6 are each C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl,

R_7 and R_8 are each hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl, and

Y is oxygen, sulfur or a sulfinyl or sulfonyl bridge.

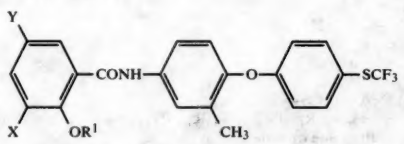
4,565,888

SUBSTITUTED SALICYLIC ACID AMIDE ANTHELMINTICS

Peter Andrews, Wuppertal; Horst Böshagen, and Heinrich Kölling, both of Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 11, 1985, Ser. No. 691,032
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401950
Int. Cl.[4] C07C *103/76*
U.S. Cl. 564—179 **5 Claims**

1. A substituted salicylic acid amide of the formula



in which

X and Y each independently is halogen, and,

R^1 is hydrogen or acetyl.

4,565,889

PROCESS FOR THE PRODUCTION OF N-(3-DIMETHYLAMINOPROPYL)METHACRYLAMIDE

David R. Livingston; Edward E. McEntire, and Edward C. Nieh, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,826
Int. Cl.[4] C07C *102/00*
U.S. Cl. 564—205 4 Claims

1. In a method wherein N-(3-dimethylaminopropyl)-3-dimethylaminopropyl-2-methylpropionamide is pyrolyzed to provide a reaction product comprising a dimethylaminopropylmethacrylamide (DMAPMA) product, a dimethylaminopropylamine (DMAPA) recycle and a N-(3-dimethylaminopropyl)-3-dimethylaminopropyl-2-methylpropionamide recycle,

the improvement for obtaining a reaction product containing a reduced percentage of impurities boiling between DMAPA and DMAPMA which comprises conducting said pyrolysis reaction in a continuous tubular reactor at a temperature within the range of about 180° to about 300° C., a pressure of about 50 to about 150 psig., an average residence time from about 1 to about 6 hours and thereafter separating the continuous tubular reactor product containing a reduced percentage of said impurities in a fractionation zone into a purified dimethylaminopropylmethacrylamide product fraction, a dimethylaminopropylamine recycle fraction and a substituted propionamide recycle fraction.

4,565,890

PROCESS FOR THE PREPARATION OF N-ACETYL-P-AMINOPHENOL

Sharad S. Sathe, Manchester, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 27, 1983, Ser. No. 546,051
Int. Cl.[4] C07C *103/127*
U.S. Cl. 564—216 27 Claims

1. In a process for the preparation of N-acetyl-p-aminophenol which comprises acetylation of p-aminophenol in an aqueous medium to produce a crude aqueous reaction mixture, recovery of the N-acetyl-p-aminophenol product by crystallization from an aqueous system comprising the reaction mixture, and separation of the crystals from the crude mother liquor, said mother liquor containing residual N-acetyl-p-aminophenol and unreacted acetic acid, the improvement comprising recovering residual N-acetyl-p-aminophenol and acetic acid from the crude mother liquor by liquid-liquid extraction with a water immiscible organic solvent, thereby producing an extract containing N-acetyl-p-aminophenol and acetic acid; and

distilling said extract to strip off said solvent and acetic acid.

27. In a process for the preparation of N-acetyl-p-aminophenol which comprises acetylation of p-aminophenol in an aqueous medium to produce a crude aqueous reaction mixture, recovery of the N-acetyl-p-aminophenol product by crystallization from an aqueous system comprising the reaction mixture, and separation of the crystals from the crude mother liquor, said mother liquor containing residual N-acetyl-p-aminophenol and unreacted acetic acid, the improvement comprising recovering residual N-acetyl-p-aminophenol and acetic acid from the crude mother liquid by liquid/liquid extraction with a water immiscible organic solvent, thereby producing an extract containing N-acetyl-p-aminophenol and acetic acid.

4,565,891

OXIDATION OF TERTIARY AMINES USING OCTACYANOMOLYBDATE OR IRON (III) SALTS AS CATALYSTS

Paul E. Correa, Cincinnati, Ohio, and Dennis P. Riley, Chesterfield, Mo., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jul. 19, 1984, Ser. No. 632,774
Int. Cl.[4] C07C *135/02*
U.S. Cl. 564—298 28 Claims

1. A process for the catalytic oxidation of a nonaromatic tertiary amine to the respective amine oxide, which comprises the steps of:

(a) providing an aqueous solvent system containing a nonaromatic tertiary amine, the aqueous solvent system having an initial pH about equal to or greater than the pKa of the tertiary amine; and

(b) contacting the aqueous solvent system with molecular oxygen in the presence of a catalytic amount of a catalyst selected from the group consisting of: (1) octacyanomolybdate salts having the formula (I):

$$(M^+)_{4-n}(Mo^{(n+4)+})(CN^-)_8 \qquad \text{I}$$

wherein M is a compatible cationic group; and n is 0 or 1; and (2) iron (III) salts having the formula (II):

$$[(Fe^{3+})(A)_3](A^-)_3 \qquad \text{II}$$

wherein A is chelating bipyridyl group and A^- is a noncoordinating anionic group, to oxidize the tertiary amine to the respective amine oxide.

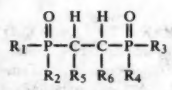
4,565,892

PROCESS FOR THE PREPARATION OF BISPHOSPHINE DIOXIDES

Richard L. Wife; Aart B. van Oort; Petrus W. N. M. van Leeuwen, and Johannes A. van Doorn, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

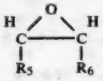
Filed Dec. 19, 1983, Ser. No. 562,620
Claims priority, application United Kingdom, Dec. 20, 1982, 8236147
Int. Cl.[4] C07F *9/53*
U.S. Cl. 568—14 11 Claims

1. A process for the preparation of a bisphosphine dioxide of the formula:



in which R_1, R_2 and R_4 being the same or different and R_3 being different than R_1 and R_2, represent alkyl- aryl- alkaryl-, alkoxyaryl- or aralkyl groups containing up to about 10 carbon atoms, or an alkylene group containing up to about 8 carbon atoms is formed by R_1 and R_2 and/or R_3 and R_4 respectively, R_5 represents H, R_6 represents H or an alkyl-, aryl-, alkaryl or aralkyl group containing up to about 8 carbon atoms, or R_5 and R_6 form an alkylene group containing up to about 6 carbon atoms, by contacting in a first stage one mole of a phosphine oxide with formula

in a solvent having less polarity than the solvent in subsequent second stage with one mole of oxirane with formula



and contacting the reaction product obtained in a second stage in a solvent having more polarity than the solvent in the first stage with one mole of a phosphine oxide with formula

and producing said bisphosphine dioxide.

4,565,893

PROCESS OF SYNTHESIS OF MERCAPTANS FROM OLEFINS AND HYDROGEN SULPHIDE BY HETEROGENEOUS CATALYSIS

Emmanuel Arretz, Pau; Alfred Mirassou, Lescar; Claude Landoussy, and Patrick Augé, both of Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Aug. 4, 1983, Ser. No. 520,201

Claims priority, application France, Aug. 5, 1982, 82 13689

Int. Cl.[4] C07D *221/18*

U.S. Cl. 568—72 **15 Claims**

1. Process for the synthesis of a mercaptan from an olefin, by the action of hydrogen sulphide thereon, in the presence of a catalyst comprising a polymer or copolymer cation exchange resin selected from the group consisting of cross-linked sulfonated polystyrene, acrylic and phenylacrylic resin having free carboxyl groups, phenolsulfonic acid-formaldehyde resin, lignosulfonic resin and copolymer of tetrafluoroethylene and perfluorosulfonic acid, characterized in that the resin is dry containing not more than 0.5% water determinable by drying at 80° for six hours and that the reaction is carried out at a temperature ranging between 45° and 75° C.

4,565,894

PREPARATION OF IONONES

Otto Hertel, Ludwigshafen; Hans Kiefer, Wachenheim, and Lothar Arnold, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 6, 1984, Ser. No. 637,890

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1983, 3328440

Int. Cl.[4] C07C *49/21*

U.S. Cl. 568—349 **10 Claims**

1. A process for the continuous preparation of ionones by cyclization of pseudoionone with concentrated sulfuric acid in the presence of an organic solvent or diluent, while cooling, and by dilution of the reaction mixture with water, wherein the pseudoionone is combined with an aliphatic or cycloaliphatic hydrocarbon which boils at 25°–65° C. under the reaction conditions, or an aliphatic chlorohydrocarbon, and the sulfuric acid, with thorough mixing and evaporative cooling by partial or complete vaporization of the solvent present in the reaction mixture, combination being effected so that the temperature of the reaction mixture is from 25° to 65° C. and the residence time of this mixture before it is diluted with water is from 0.05 to 20 seconds.

4,565,895

PROCESS FOR THE PREPARATION OF 4-HYDROXY-2,4,6-TRIMETHYL-2,5-CYCLOHEXADIENONE

Michel Costantini, Lyons; Francoise Igersheim, Villeurbanne, and Léon Krumenacker, Serezin du Rhone, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Sep. 21, 1984, Ser. No. 652,919

Claims priority, application France, Sep. 22, 1983, 83 15071

Int. Cl.[4] C07C *45/29*

U.S. Cl. 568—362 **9 Claims**

1. A process for the preparation of 4-hydroxy-2,4,6-trimethyl-2,5-cyclohexadienone, which comprises oxidising 2,4,6-trimethylphenol with a manganese derivative of valency greater than 2 in an aqueous acidic medium, and isolating the product obtained.

4,565,896

PROCESS FOR LOW PRESSURE SYNTHESIS OF ETHYLENE GLYCOL FROM SYNTHESIS GAS

John F. Knifton, Austin, and Roger G. Duranleau, Georgetown, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,284

Int. Cl.[4] C07C *29/00, 31/20*

U.S. Cl. 568—852 **15 Claims**

1. A low pressure process for making ethylene glycol comprising reacting synthesis gas, a mixture of carbon monoxide and hydrogen, plus formaldehyde or paraformaldehyde in the presence of a catalyst containing an effective amount of cobalt-containing compound, a a halogen-free silicon-containing promoter containing at least one silicon-carbon bond per molecule, and a solvent selected from the group consisting of an aromatic hydrocarbon solvent, a halogenated aromatic-containing solvent and a solvent containing both the halogen and ether functions, at a temperature of at least 50° C. and a pressure of at least 500 psig, wherein the majority of said ethylene glycol product separates as a separate liquid phase from the cobalt catalyst-rich solvent phase.

4,565,897

PRODUCTION OF AROMATIC HYDROCARBONS

Brian R. Gane, Ottershaw, and Antony H. P. Hall, Cobham, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Dec. 13, 1984, Ser. No. 681,010

Claims priority, application United Kingdom, Dec. 24, 1983, 8334486

Int. Cl.[4] C07C *2/84*

U.S. Cl. 585—415 **11 Claims**

1. A process for producing aromatic hydrocarbons comprising bringing into contact at a temperature below 580° C. a mixed hydrocarbon feedstock containing at least 50% w/w of C_3 and/or C_4 hydrocarbons and from 10 to 50% w/w of ethane with a catalyst composition comprising an aluminosilicate in which the molar ratio of silica to alumina is at least 5:1.

4,565,898

DEHYDROGENATION OF DEHYDROGENATABLE HYDROCARBONS

Mark J. O'Hara; Tamotsu Imai, both of Mount Prospect; Jeffery C. Bricker, Des Plaines, and David E. Mackowiak, Mount Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 6, 1985, Ser. No. 708,832

Int. Cl.[4] C07C *5/333*

U.S. Cl. 585—441 **20 Claims**

1. In a process for the dehydrogenation of dehydrogenatable hydrocarbon with separate and intermediate selective oxidation of hydrogen which comprises:

(a) contacting said hydrocarbon with a dehydrogenation catalyst comprising an alkaline metal-promoted iron compound in a first-reaction dehydrogenation zone in the

presence of steam at dehydrogenation conditions to produce a first-reaction dehydrogenation zone effluent stream comprising a mixture of unconverted hydrocarbons, dehydrogenated hydrocarbons, hydrogen and steam;

(b) removing said first-reaction dehydrogenation zone effluent from said first-reaction dehydrogenation zone;

(c) passing said removed first-reaction dehydrogenation zone effluent of step (b) to a second-reaction oxidation zone, which is separate and discrete from said first-reaction dehydrogenation zone;

(d) contacting said first-reaction dehydrogenation zone effluent in said second-reaction oxidation zone with an oxygen-containing gas to selectively oxidize said hydrogen within said first-reaction zone effluent to the substantial exclusion of oxidation of said unconverted and dehydrogenated hydrocarbons in the presence of an oxidation catalyst consisting essentially of a Group VIII noble metal, a Group IVA metal, and a Group IA or IIA metal composited on an alumina support at oxidation conditions wherein said exothermic selective oxidation of said hydrogen provides additional heat and thereby raises the temperature of said unconverted and dehydrogenated hydrocarbons;

(e) withdrawing said unconverted and dehydrogenated hydrocarbons from said second-reaction oxidation zone having an increased temperature with respect to the temperature of said first-reaction dehydrogenation zone effluent;

(f) passing said removed second-reaction oxidation zone product stream of step (e) to a third-reaction dehydrogenation zone containing a dehydrogenation catalyst comprising an alkaline metal-promoted iron compound at dehydrogenation conditions to produce dehydrogenated hydrocarbons; and

(g) withdrawing and recovering said dehydrogenated hydrocarbons, the improvement which comprises calcining said alumina support of said oxidation catalyst used in step (d) at a temperature in the range of from about 900° to about 1500° C. prior to impregnation thereon of all of the metallic portions of said oxidation catalyst.

4,565,899

IRON OXIDE CATALYSTS CONTAINING COPPER AND ZINC COMPOUNDS AND PROCESS FOR PARA-ETHYLTOLUENE DEHYDROGENATION

George T. Burress, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1984, Ser. No. 681,968

Int. Cl.[4] **C07C** *2/66, 4/12, 5/32, 5/327*

U.S. Cl. 585—445 **7 Claims**

1. A process for the dehydrogenation of para-ethyltoluene to selectively form para-methylstyrene, said process comprising contacting para-ethyltoluene under dehydrogenation reaction conditions with a catalyst composition comprising:

a. from about 30% to 60% by weight of iron oxide, calculated as ferric oxide;

b. from about 13% to 48% by weight of potassium compound, calculated as potassium oxide;

c. from about 0% to about 5% of chromium compound, calculated as chromic oxide;

d. from about 1% to 10% by weight of copper chromite; and

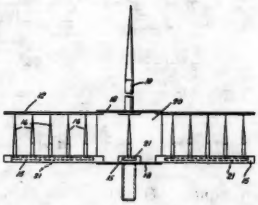
e. from 1% to 10% by weight of zinc ferrate.

4,565,900

LIGHTNING ROD CONSTRUCTION

Angel I. Arnau, Terrassa, Cardoner, 4 Barcelona, Spain

Filed Sep. 14, 1984, Ser. No. 650,726
Claims priority, application Spain, Sep. 19, 1983, 526264
Int. Cl.[4] H02G *13/00*
U.S. Cl. 174—3 4 Claims



1. A lightning rod structure comprising a steel rod for electrical connection to the ground, the rod extending upwardly from a central hub, the structure further including an accelerator comprising plural metallic deflector arms extending radially from the hub, each arm having a series of holes therethrough and being electrically connected to the rod, further arms of dielectric material radially extending from the hub below the respective deflector arms, the further arms supporting upright exciter needles centered substantially on the respective holes in the deflector arms.

4,565,901

GAS-INSULATED ELECTRIC DEVICE

Koichi Hirooka, Osaka; Setsuyuki Matsuda, and Yoshikuni Arahata, both of Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1984, Ser. No. 618,823
Claims priority, application Japan, Jun. 14, 1983, 58-108177
Int. Cl.[4] H01B *3/16*
U.S. Cl. 174—17 GF 1 Claim

1. A gas-insulated electric device comprising an electric conductor disposed in a sealed vessel filled with an insulating gas, said conductor being supported by a solid insulating member, wherein the insulating gas is a mixture comprising 10–60 mole % of C_2F_5CN and 40–90 mole % of SF_6.

4,565,902

TELEPHONE CARE SYSTEM WITH SUPPLEMENTARY ALARM MESSAGE

Patrick G. Phillipps, Lincoln, Mass., assignor to Lifeline Systems, Inc., Watertown, Mass.

Filed Nov. 21, 1983, Ser. No. 553,749
Int. Cl.[4] H04M *11/04*
U.S. Cl. 179—5 R 10 Claims

1. A system for communication by telephone wires of information concerning the circumstances of a subscriber, the system comprising:

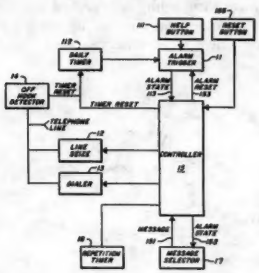
(a) line-seizing means for connecting a communicator output to the telephone wires;

(b) dialing means for dialing a telephone number over the communicator output;

(c) alarm means, for, in the event of a specified occurrence, entering an alarm state;

(d) message selection means, for selecting a message from a plurality of predetermined messages, at least one criterion for selection being whether a message was previously sent without the alarm state of the alarm means thereafter having been terminated, so that a first message is selected when the system first enters an alarm state, and a second, supplementary message is selected at a specified time interval thereafter during a continuing alarm state; and

(e) control means, activated by the alarm means and further connected to the line-seizing means, the dialing means, and the message selection means, for (i) activating the line-seizing means and the dialing means, (ii) sending a message selected by the message selection means, and (iii) causing the alarm state of the alarm means to be terminated on receipt of a reset signal.

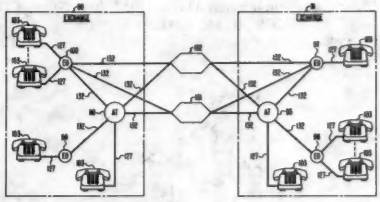


4,565,903

TELEPHONE INTEREXCHANGE CARRIER SELECTION

Douglas H. Riley, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1983, Ser. No. 519,851
Int. Cl.[4] H04M *3/42*
U.S. Cl. 179—18 B 38 Claims



1. A method of selecting a carrier for a telephone call being made over an originating terminal link, comprising the steps of:

examining signals associated with the call and received over the originating terminal link to determine whether they include signals other than call destination-identifying signals that identify a particular one of a plurality of carriers to carry the call;

examining contents of a memory associated with the terminal link to determine whether they identify a carrier predesignated to carry calls made over the originating terminal link, when the signals received over the terminal link are determined not to include the signals that identify a carrier to carry the call; and

connecting the call to the identified carrier when a carrier is determined to be identified by either the received signals or the memory contents.

4,565,904

REMOVAL HANDLE FOR IN-THE-EAR HEARING AIDS

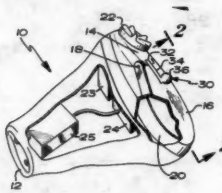
Mas Harada, Minneapolis, Minn., assignor to Qualitone Hearing Aids, Division of XCor Corp., Minneapolis, Minn.

Filed Oct. 9, 1984, Ser. No. 658,562
Int. Cl.[4] H04K *25/02*
U.S. Cl. 179—107 E 5 Claims

1. An in-the-ear hearing aid device having means for receiving and amplifying sound external to an ear; said device includ-

ing a proximal receiver end portion which is positionable within an ear canal adjacent an eardrum and a distal faceplate portion facing the outside of an ear when said device is positioned therewithin; the improvement comprising:

(a) handle means for aiding removal of said device from an ear, said handle means including an elongated handle member attached to an exterior surface of said faceplate



portion, said handle member being hingedly attached at one end to said portion such that movement of said handle member about said hinge causes an opposite end of said handle member to move toward or away from said faceplate; and

(b) said faceplate includes a battery door, hingedly mounted thereto by a hinge pin, said handle member being hingedly mounted to said faceplate through the same said hinge pin.

4,565,905

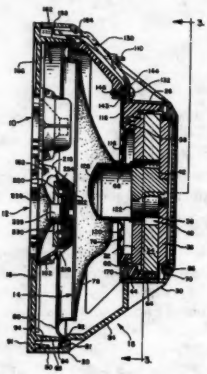
LOUDSPEAKER CONSTRUCTION

Melvin S. Nation, Elmhurst, Ill., assignor to International Jensen Incoporated, Schiller Park, Ill.

Continuation-in-part of Ser. No. 372,744, Apr. 28, 1982, Pat. No. 4,465,905. This application May 9, 1984, Ser. No. 608,385

Int. Cl.⁴ H04R *9/00, 9/04, 9/06*

U.S. Cl. 179—115.5 PC **36 Claims**



1. In a loudspeaker of the type comprising a frame, a diaphragm, and a spider secured to the diaphragm, the improvement comprising:

a first mounting member, secured to the frame and located at a perimeter region of the spider;

a second mounting member held in place with respect to the frame and located to clamp the perimeter region of the spider between the first and second mounting members in order to locate the spider and hold it in place with respect to the frame mechanically;

one of the mounting members comprising a ridge and the other of the mounting members defining a mating groove positioned such that the ridge forces the perimeter region of the spider into the groove to enhance the clamping action of the mounting members.

4,565,906

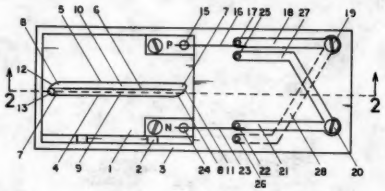
RECIPROCATING REVERSE-CIRCUIT SWITCH

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Jan. 30, 1985, Ser. No. 696,551

Int. Cl.⁴ H01H *9/00*

U.S. Cl. 200—1 V **1 Claim**



1. A reciprocating reverse-circuit switch comprising in general a reciprocating plastic block (1) with positive and negative terminal posts, terminal arms and connectors which serve as means of reversing a direct current through an electromagnetic device, and comprising in particular;

a reciprocating plastic block (1) mounted on horizontal transverse tracks (2) in a plastic housing (3) so as to reciprocate thereon in a transverse direction perpendicular to the longitudinal centerline of the block,

said reciprocating plastic block (1) having two adjacent parallel grooves (4,5) located on opposite sides of a vertical plate (6) embedded in and occupying the longitudinal centerline of the block,

a reciprocating pin (13) mounted to the housing of an electromagnetic device, engaging one of two grooves (4,5), and reciprocating in a direction parallel to the longitudinal centerline of the block as means of actuating transverse reciprocating motion in the block,

said grooves (4,5) having bottoms which are inclined upward in opposite directions from a low end (7) to a high end (8) so as to form ramps (9,10) which confine reciprocating pin (13) to one of said grooves (4,5) by controlling the elevation of reciprocating pin (13) in the respective groove,

one of said grooves (4) having a curve (11) in the outer wall at one end of the groove, said curve (11) deflecting said reciprocating plastic block (1) in a transverse direction by engaging reciprocating pin (13) at the end of a stroke, said deflection forcing reciprocating pin (13) from the high end (8) of one of said grooves (4) into the low end (7) of the other of said grooves (5),

the other of said grooves (5) having a curve (12) in the outer wall at one end of the groove, said curve (12) deflecting said reciprocating plastic block (1) in a transverse direction by engaging reciprocating pin (13) at the end of a stroke, said deflection forcing reciprocating pin (13) from the high end (8) of the other of said grooves (5) into the low end (7) of one of said grooves (4),

said reciprocating plastic block (1) having a positive (P) main terminal post (15) and a terminal arm (16) communicating with a parallel post (17) as means of conducting a direct current through parallel connector (18) and terminal (19) to the electromagnetic device, and having a negative (N) main terminal post (24) and terminal arm (23) communicating with parallel post (22) as means of conducting a direct current through parallel conductor (21) and terminal (20) to the electromagnetic device,

a reciprocating plastic block (1) having a positive (P) main terminal post (15) and a terminal arm (16) communicating with a cross post (25) as means of conducting a direct current through cross conductor (27) and terminal (20) to the electromagnetic device, and having a negative (N) main terminal post (24) and a terminal arm (23) communicating with cross post (26) as means of conducting a direct current through cross conductor (28) and terminal (19) to the electromagnetic device.

4,565,907

IGNITION DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE

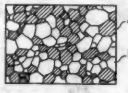
Ken Takahashi, Ibaraki; Ryutarou Jimbou, Hitachiota; Yasuo Matsushita, Hitachi; Seiichi Yamada, and Tetuo Kosugi, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

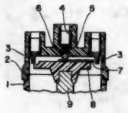
Filed Jul. 25, 1984, Ser. No. 634,470

Claims priority, application Japan, Jul. 27, 1983, 58-138102

Int. Cl.[4] H01H *19/00*

U.S. Cl. 200—19 DR **5 Claims**





1. An ignition distributor for an internal combustion engine, which comprises a rotor electrode capable of rotary motion and a plurality of stationary electrodes arranged substantially in a circle around the rotor electrode through an electric discharge clearance therebetween, the rotor electrode being a sintered mixture comprising silicon carbide and one of the aluminum compounds aluminum oxide or aluminum nitride and/or one of the boron compounds boron nitride or boron carbide, said sintered mixture having a specific resistance of 10 to 10^6 Ωcm at room temperature.

4,565,908

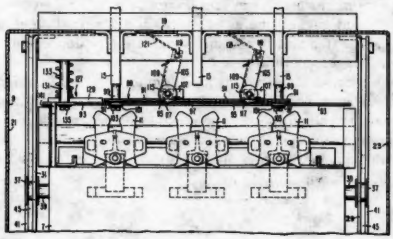
DRAWOUT SWITCHGEAR APPARATUS WITH RETRACTABLE SHUTTER MECHANISM FOR TERMINAL STABS

Fred Bould, Edgewood Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 12, 1984, Ser. No. 680,691

Int. Cl.[4] H02B *1/04*

U.S. Cl. 200—50 AA **2 Claims**



1. Switchgear apparatus comprising:

a cell;

a plurality of spaced fixed terminal stabs in the cell;

a switchgear unit removably disposed in the cell and including terminal means for detachably engaging the terminal stabs during movement into and out of the cell;

a barrier of electrically insulative material including a first shutter having opening means for receiving the stabs;

support means including links movably mounting the shutter between lateral positions of nonalignment and alignment of the opening means with the stabs and biased in the nonalignment position;

obstruction means retractably mounted in the path of movement of the shutter for barring movement of the shutter from the nonalignment position;

the unit including trigger means releasing the obstruction means when the unit moves into the cell so as to retract the obstruction means from the path of movement of the shutter to enable the opening means to align with the stabs and to enable connection of the terminal means with corresponding stabs;

a second shutter adjacent to the first shutter and having holes aligned with the stabs, the second shutter being biased away from the stabs and is disposed on the side of the first shutter away from the stabs; and

the links including roller means extending through the opening means for rolling contact with the second shutter so that as the unit moves into the cell the unit retracts the second shutter and causes the first shutter to retract laterally and to thereby bring the opening means into alignment with the stabs whereby the stabs are exposed to the terminal means.

4,565,909

HANDLE SWITCH ASSEMBLY FOR A MOTOR VEHICLE

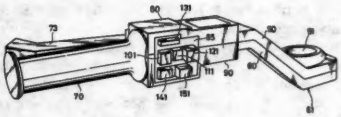
Michio Yashima, Kawagoe; Masami Takanashi, Yokohama, and Akihiro Komatsu, Tokyo, all of Japan, assignors to Honda Kogyo Kabushiki Kaisha, Tokyo, Japan

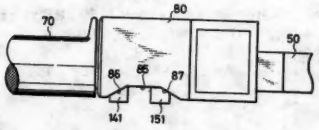
Filed Jun. 7, 1983, Ser. No. 501,882

Claims priority, application Japan, Jun. 9, 1982, 57-98938; Jun. 11, 1982, 57-87712[U]; Jun. 11, 1982, 57-87713[U]; Jun. 11, 1982, 57-87714[U]; Jun. 11, 1982, 57-87715[U]; Jun. 11, 1982, 57-87716[U]

Int. Cl.[4] H01H *9/06*

U.S. Cl. 200—61.85 **7 Claims**





1. A handle switch assembly for a motorcycle having a handle bar with a handle grip mounted at an end thereof, comprising:

a pair of elongated members oppositely fitted with each other to form said handle bar, said elongated members having mutually opposing portions formed therein bent such as to form a first cavity therebetween near to the end on which the handle grip is mounted, and

at least a switch element with a switch operating member housed in said first cavity of said elongated members such that the switch element can be actuated by manual operation of the switch operating member from outside of said first cavity.

4,565,910

SWITCH APPARATUS RESPONSIVE TO DISTORTION

Jeff L. Musick; Robert D. Blaker, and David G. Blaker, all of Tulsa, Okla., assignors to Bed-Check Corporation, Tulsa, Okla.

Continuation-in-part of Ser. No. 429,047, Sep. 30, 1982, Pat. No. 4,484,043. This application Nov. 19, 1984, Ser. No. 673,118
The portion of the term of this patent subsequent to Nov. 20, 2001, has been disclaimed.
Int. Cl.[4] H01H *3/02*
U.S. Cl. 200—85 R 3 Claims

1. An improved switch responsive to distortion by the weight of a patient in a bed comprising

an elongated, thin, generally rectangular base member of insulating flexible material providing a top and bottom surface and having an elongated generally rectangular cutout therein;

a first non-conductive, thin, generally rectangular upper cover member of flexible material having a bottom and a top surface;

a second non-conductive, thin, generally rectangular lower cover member of flexible material having a bottom and a top surface, the dimensions of said first and second cover members being of length and width greater than said base member, said base member being received between said upper and lower cover members, and said cover members providing overlapping edges;

a first electrically conductive layer affixed to said bottom surface of said upper cover and a second conductive layer affixed to said top surface of said lower cover, the width of said conductive layers being less than the width of said cover members; and

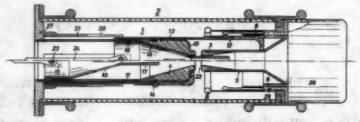
a cable having a first and second conductor, the first conductor having engagement with said first conductive layer and the second conductor having engagement with said second conductive layer, the peripheries of said cover members being sealed, the conductive layers being normally supported by said base member in spaced apart relationship by the memory of said base and said cover member, but which surfaces contact each other through said cutout in said base member when the apparatus is subject to bending or twisting distortion.

4,565,911

HIGH-VOLTAGE CIRCUIT-BREAKER

Ernst Slamecka, Alt-Pichelsdorf 13, D-Berlin 20, Fed. Rep. of Germany

Filed Aug. 9, 1983, Ser. No. 521,536
Int. Cl.[4] H01H *33/88*
U.S. Cl. 200—148 A 2 Claims



1. A gas-blast circuit-breaker comprising:

(a) dual-blast nozzle arrangement, one nozzle being made of electrically conductive material, the other nozzle being made of electrically insulating material, both nozzles facing each other in a fixed axial distance;

(b) said dual-blast nozzles, each of them continuing into a pipe structure conducting the downstream gas flow, and being temporarily surrounded by a movable single compression cylinder, cooperating with a fixed piston;

(c) fixed and movable contact pieces, each separated according to carrying continuous and arc current respectively;

the improvement of said circuit-breaker characterize:

(d) in one of said dual-blast nozzles, a nozzle body (4) and a piston body (10) being integrated into a structural unit;

(e) said structural unit being mounted on a pipe shaped body (11);

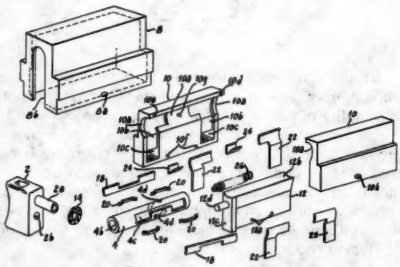
(f) said pipe shaped body (11) featuring a diameter being at least approximately equal to the diameter of said piston body (10).

4,565,912

TRIGGER SWITCH WITH ROTATING CONTACT CARRIER

Robert L. Glenn, Arab, Ala., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 14, 1984, Ser. No. 610,067
Int. Cl.[4] H01H *21/10, 13/08*
U.S. Cl. 200—157 5 Claims



1. A trigger operated electric switch adapted for use in a hand held portable tool comprising, in combination:

a housing;

stationary contacts in said housing;

linearly depressible trigger operating means extending from said housing;

means biasing said trigger operating means to an extended position with respect to said housing;

contact carrier means rotatably mounted on said trigger operating means within said housing for linear movement with said trigger operating means and for rotation about an axis extending in the direction of linear depression of said trigger operating means;

movable contacts carried by said contact carrier means; and

means responsive to depression of said trigger operating means for effecting rotation of said contact carrier means to move said movable contacts into bridging engagement with said stationary contacts with a combined linear and rotational wiping action.

4,565,913

METHOD FOR THE DISINTEGRATION OF SILICON FOR SEMICONDUCTOR

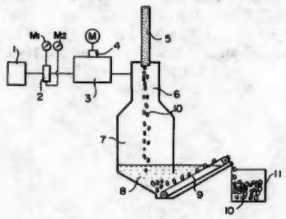
Yoshifumi Yatsurugi, Fujisawa, and Meiseki Katayama, Ebetsu, both of Japan, assignors to Komatsu Electronic Metals Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1984, Ser. No. 630,118
Claims priority, application Japan, Aug. 2, 1983, 58-140589
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 M 6 Claims

1. A method of disintegrating polycrystalline silicon in rod form into a size suitable for making monocrystalline material according to the Czochralski method comprising:

introducing polycrystalline silicon in rod form into a microwave oven;

subjecting the polycrystalline silicon in rod form to microwave radiation in said oven for a short time to quickly dielectrically heat the polycrystalline silicon in rod form and to disintegrate it into a size suitable for making monocrystalline material according to the Czochralski method.



4,565,914

METHOD AND APPARATUS FOR DEMOUNTING A SPOT WELDED METAL PLATE

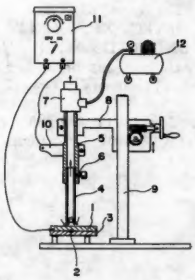
Hidenori Suzaki, Uji; Tetsuro Miura, Tenri; Masanori Maeda, Higashiosaka, and Koji Inaoka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,155

Claims priority, application Japan, Apr. 30, 1982, 57-73623; May 4, 1982, 57-74918

Int. Cl.⁴ B23P *1/06*

U.S. Cl. 219—68 **13 Claims**



1. A method of demounting a metal plate spot welded to a metal member, comprising the steps of:

(1) placing a hollow electrode rod having a free tip perpendicular to the metal plate in air such that the tip of the electrode rod opposes a ring-shaped portion of the metal plate at the periphery of a spot weld between the metal plate and the metal member;

(2) forming and maintaining a continuous electric arc, through the air, between the electrode rod and the metal plate;

(3) melting only a ring-shaped portion of the metal plate at the periphery of the spot weld with continuous arc heat to form molten metal on the metal plate; and

(4) drawing up the molten metal through the hollow portion of the electrode rod.

4,565,915

TRAVELLING WIRE EDM APPARATUS PROVIDED WITH A WIRE SUPPORT ARM PASSED THROUGH THE WALL OF A MACHINING FLUID TANK

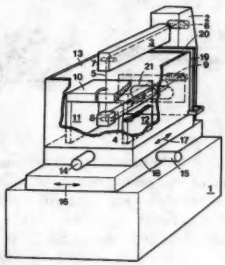
Roger Girardin, Vernier, Switzerland, assignor to Charmilles Technologies, S.A., Geneva, Switzerland

Filed Jul. 16, 1984, Ser. No. 631,449

Claims priority, application Switzerland, Jul. 27, 1983, 4112/83

Int. Cl.⁴ B23H *1/00, 7/10, 7/26;* F16J *15/56*

U.S. Cl. 219—69 W **5 Claims**



1. A travelling wire EDM apparatus for cutting by electrical discharges an electrode workpiece by means of an electrode wire stretched and travelling between two guide arms, said apparatus having a base supporting said guide arms and a tank filled with machining fluid, an electrode workpiece mounted within said tank, said apparatus having means for displacing said tank along two displacement axes relative to said electrode wire guide arms, at least one opening through a wall of said tank, one of said guide arms projecting through said opening, and sealing means preventing said machining fluid from leaking through said opening, said sealing means comprising a plate slidably mounted along one of said displacement axes, said plate being disposed parallel to said tank wall and overlapping said opening, an aperture in said plate, a tubular member disposed through said plate aperture and affixed rigidly in said plate aperture in a leakproof manner, said one of said guide arms being supported slidably through said tubular member such as to enable said one of said guide arms to be displaced along said displacement axes, at least one seal disposed between the plate and the tank wall, and at least one annular seal mounted internally in said tubular member in engagement with a peripheral surface portion of said one of said guide arms.

4,565,916

ELECTRIC HAIR CURLING IRON WITH ROTATABLE POWER CORD

Eiji Tsuji, Hikone; Akio Gotou, and Kuniharu Ichikawa, both of Kyoto, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 30, 1982, Ser. No. 428,660

Claims priority, application Japan, Nov. 25, 1981, 56-191075

Int. Cl.⁴ A45D *1/04;* H05B *3/00*

U.S. Cl. 219—225 **13 Claims**

1. A hair iron comprising:

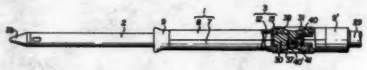
(a) first and second elongated handles pivotally connected together adjacent an end of each;

(b) a heating means comprising an electric heater rod secured to and projecting outwardly from the free end of said first handle;

(c) a hair press plate secured to and projecting outwardly from the free end of said second handle so as to be pivotally contactable with said heater rod; a power cord for supplying power to said electric heater rod;

(d) a rotary connector connected to said power cord adja-

cent the pivotal connection of said first and second handles, said connector being formed as a protrusion on one of said pivotally connected ends of said first and second handles on the opposite side of the pivotal connection of the first and second handles from the free ends thereof and



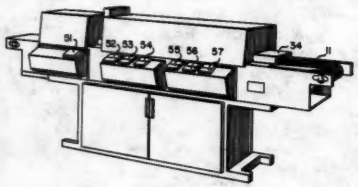
being coaxial with a longitudinal center line between the two handles and the axis of rotation of the rotary connector being also in substantially the same plane as siad pivotal connection between the handles, and means connecting said rotary connector to said heater rod.

4,565,917

MULTI-ZONE THERMAL PROCESS SYSTEM UTILIZING NONFOCUSED INFRARED PANEL EMITTERS

Edward J. Furtek, Salisbury, Mass., assignor to Vitronics Corporation, Newmarket, N.H.

Filed Jan. 18, 1984, Ser. No. 572,163
Int. Cl.[4] F27B *9/06*
U.S. Cl. 219—388 **17 Claims**



1. A multi-zone thermal process apparatus utilizing nonfocused infrared panel emitters, said apparatus comprising:

an insulated housing having a plurality of zones along its length;

at least one nonfocused infrared panel emitter disposed in each of said zones, each said panel emitter having an emitting surface for emitting infrared radiation;

means for moving a product load through each of said zones, said moving means being spaced a predetermined distance from each of said emitting surfaces; and

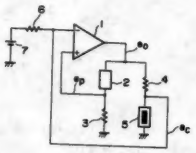
control means for selectively tuning each of said panel emitters in each of said zones to cause each of said panel emitters to selectively emit infrared radiation of a predetermined peak wavelength for selective heating of desired components of the product load which have absorption characteristics adapted to more readily absorb the radiation having the predetermined peak wavelength.

4,565,918

HEATING CIRCUIT FOR A THERMAL RECORDING-PEN

Hideaki Ayabe; Takeshi Toyosawa; Shigeo Ikeda, and Kenichiro Ohta, all of Tokyo, Japan, assignors to Graphtec Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,933
Claims priority, application Japan, Jun. 28, 1982, 57-109960
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—499 **10 Claims**



1. Heating circuit for a thermal recording-pen having a heating element which exhibits changes in resistance under certain printing conditions, comprising:

a resistance bridge which includes one resistance arm composed of said heating element of the thermal recording-pen and three other resistance arms,

an operational amplifier having an input and having an output which supplies power to said resistance bridge, and

a feedback circuit connecting an output of said resistance bridge to the input of said operational amplifier;

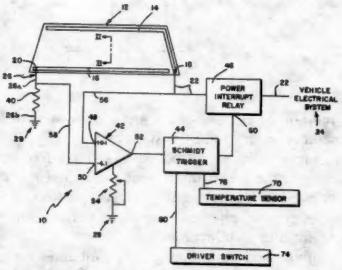
at least one of said three other resistance arms being a non-linear resistance characterized in that the resistance of the arm varies in a predetermined non-linear relation to the voltage across said arm, said relation being selected so that a resultant change in power provided by said operational amplifier output will cause a corresponding change in heating of said heating element to compensate for said exhibited change.

4,565,919

CRACK DETECTOR FOR ELECTRICALLY CONDUCTIVE WINDSHIELD

Lowell E. Bitter, Holland, and Bryan L. Lundgren, South Haven, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Jun. 14, 1984, Ser. No. 620,687
Int. Cl.[4] H05B *1/02*; B60L *1/02*
U.S. Cl. 219—509 **12 Claims**



1. An electrically heated panel assembly comprising:

a panel including an electrically conductive coating;

cable means for conducting direct current through said coating;

controllable switch means coupled in series with said cable

means for opening and closing a circuit through said cable means, said controllable switch means including a control terminal;

a ground resistor coupled in series with said cable means between said conductive coating and ground;

comparator means for comparing the voltage across said coating and the voltage across said ground resistor; and

control means coupled to said control terminal and responsive to said comparator means for opening said controllable switch means when the relation of the coating voltage to the ground resistor voltage is unacceptable.

4,565,920

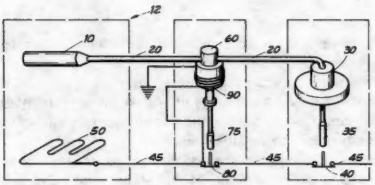
FAIL SAFE THERMAL CONTROL DEVICE

John J. Theiss, St. Louis, Mo., and Paul T. Durst, Louisville, Ky., assignors to Temp. Systems, Inc., St. Louis, Mo.

Filed May 14, 1984, Ser. No. 610,035

Int. Cl.[4] H05B *1/02*

U.S. Cl. 219—513 **6 Claims**



1. A pressure responsive mechanism consisting of:

(a) a pressure containing chamber;

(b) a hollow, resilient ellipsoid having a major axis mounted in said chamber;

(c) means for varying the pressure within said chamber so that the major axis of the ellipsoid increases in length when the chamber pressure is increased and decreases in length when the chamber pressure is reduced; and

(d) means for communicating the variation in length of said major axis to the exterior of the pressure containing chamber.

4,565,921

ELECTRIC THERMAL UNIT FOR CONTROLLABLY HEATING CYLINDERS HAVING TWO COAXIAL INTERSPACES FOR CIRCULATING VENTILATION AIR THERETHROUGH

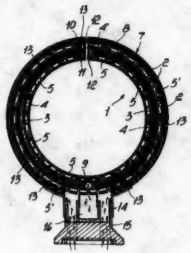
Gaetano Piazzola, Via Borri, 148 21100- Varese, Italy

Filed Mar. 12, 1984, Ser. No. 588,670

Claims priority, application Italy, Mar. 17, 1983, 20131 A/83

Int. Cl.[4] H05B *3/02*

U.S. Cl. 219—550 **5 Claims**



1. An electric thermal unit for controllably heating cylinders in extruders, injection presses and drawing machines, comprising a coiled resistance heater incorporated to a structure bent on itself into a ring-like shape and including a plurality of ceramic strips which are coupled together and define, at the middle longitudinal portion thereof, holes for passing as many runs of said coiled resistance heater therethrough, characterized in that, at the peripheral longitudinal portions thereof, said strips are formed with holes forming two substantially continuous outer and inner interspaces, intercommunicating at two end portions whereof, said structure comprising a double outer band, said outer interspace being in communication with a heater adapted to deliver air, as heated by said resistance heater, to provide utilization outlets.

4,565,922

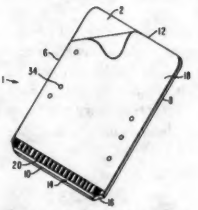
KEY CARD APPARATUS

Eric G. Anderson, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 19, 1983, Ser. No. 496,044

Int. Cl.[4] G06K *19/06*

U.S. Cl. 235—492 **16 Claims**



1. Key card apparatus comprising: a circuit card stock having first and second sides, and having first and second longitudinally extending edges and first and second opposite end edges; a first series of spaced contacts mounted on the first side adjacent the first end edge and extending generally perpendicularly from the first end edge; a second series of spaced contacts mounted on the second side near the first end edge and extending generally perpendicularly from the first end edge; a first series of conductors respectively connected to the first series of contacts and extending inward therefrom on the first side towards the second end edge; means for commonly connecting the first series of conductors together; a second series of conductors respectively connected to the second series of contacts, the second series of conductors extending inward from the contacts on the second side of the card towards the second end edge, and then extending across the card between the first and second longitudinal edges and then extending longitudinally on the card toward the first end edge, the second series of conductors on the second side being spaced inwardly from the first and second longitudinally extending edges, and the second end edge a distance greater than corresponding portions of the first series of conductors on first side so as to leave a peripheral area through which holes may be punched to sever selected ones of the first series of conductors to incorporate a code into the card; connectors extending through the card from the first surface to the second surface for selectively connecting the first series of conductors to the second series of conductors thereby connecting the second series of contacts to the first series of contacts in reverse order so that the card is reversible; and means for interrupting selected conductors.

4,565,923

IMAGE CONVERTER HAVING SEPARATE AND SEQUENTIAL SWITCHING OF DEFLECTOR PLATE POTENTIALS

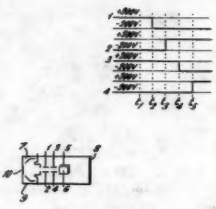
Alexander E. Huston, Berkshire, England, assignor to Hadland Photonics Limited, Bovington, England

Filed Oct. 13, 1982, Ser. No. 433,968

Claims priority, application United Kingdom, Oct. 15, 1981, 8131152; Aug. 10, 1982, 8222999

Int. Cl.[4] H01J *31/50*

U.S. Cl. 250—213 VT 3 Claims



1. In an image converter including a screen and means for producing a beam of electrons for forming an image on said screen, a beam deflection system comprising the combination of:

at least one pair of electrostatic deflector plates for deflecting said beam of electrons whereby to change the position of said image on said screen; and

means for switching each plate in said pair of plates between respective potentials in a single step whereby to provide a plurality of distinct image positions on said screen.

4,565,924

LIGHT SIGNAL BINARY DEVICE WITH OPTICAL FEEDBACK

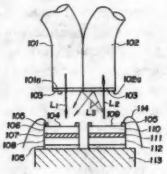
Haruo Misumi; Hiroshi Ogawa, both of Joyo; Naotake Nagao, Muko, and Katsuhiko Oimura, Osaka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 4, 1983, Ser. No. 472,244

Claims priority, application Japan, Mar. 5, 1982, 57-34794; Mar. 31, 1982, 57-47192[U]; Mar. 31, 1982, 57-47193[U]; Mar. 31, 1982, 57-47194[U]

Int. Cl.[4] H01L *31/14*

U.S. Cl. 250—227 5 Claims



1. A light signal binary device comprising:

an input optical fiber for transmitting an input light signal;

light receiving means for receiving said input light signal and converting said input light signal into an electric signal;

light emitting means for receiving said electric signal and converting said electric signal into an output light signal;

an output optical fiber having an open end for receiving and transmitting said output light signal; and

a partially reflecting film on said open end of said output optical fiber for reflecting part of said output light signal to said light receiving means as positive optical feedback.

4,565,925

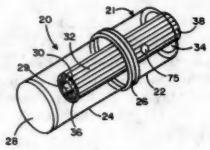
INFRARED DETECTOR DEWAR WITH ALL-KOVAR LEADS, AND METHOD OF MAKING THE SAME

David A. K. Anderson, Irvine; James B. Gilpin, San Juan Capistrano, and Melvin J. Kniffin, Costa Mesa, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Aug. 10, 1983, Ser. No. 522,439

Int. Cl.[4] G01J *5/06*

U.S. Cl. 250—352 2 Claims



1. A dewar for infrared detectors adapted to operate in a cryogenic environment, comprising:

(a) evacuated envelope means;

(b) hollow glass stem means closed at one end providing a cryogenic fluid conduit and extending into said envelope means from the outside thereof;

(c) infrared detector means positioned in said envelope means at the closed end of said stem means; and

(d) electrical conductor means extending along said stem means between said detector means and the open end of said stem means,

(e) said conductor means being longitudinally and transversely homogeneous throughout the length of said stem means, said conductor means being encapsulated in the walls of said stem means generally throughout its length.

4,565,926

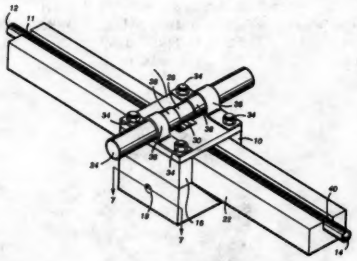
METHOD AND APPARATUS FOR DETERMINING THE CONTENT AND DISTRIBUTION OF A THERMAL NEUTRON ABSORBING MATERIAL IN AN OBJECT

Thomas W. Crane, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 21, 1983, Ser. No. 564,125

Int. Cl.[4] G01T *3/00*

U.S. Cl. 250—390 18 Claims



1. An apparatus for determining the content and distribution of a thermal neutron absorbing material within an object, said apparatus comprising:

a. means for generating neutrons having an energy higher than thermal neutrons;

b. means for thermalizing said higher energy neutrons, said neutron thermalizing means being disposed between said neutron generating means and the object;

c. neutron detecting means for counting thermal neutrons, said neutrons detecting means including an active portion, said active portion being centrally disposed within said neutron detecting means and in substantial alignment with said neutron generating means; and

d. shield means interposed between the object and said neutron detecting means, said shield means comprising an effective thermal neutron absorbing material and having portions defining an orifice, said orifice disposed in substantial alignment between said active portion and said neutron generating means, whereby the number of neutrons absorbed by the object per unit time is determined by comparing the neutron flux at said neutron detecting means when the object is located between said neutron thermalizing means and said shield means with the neutron flux when the object is absent.

4,565,927

RADIATION GENERATION OF "SIGNATURE" FOR REELED-WEB

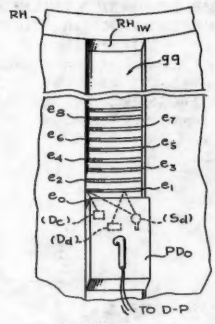
Herbert U. Ragle, San Mateo, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 351,952, Feb. 24, 1982, which is a continuation-in-part of Ser. No. 53,304, Jun. 29, 1979, Pat. No. 4,337,659, and Ser. No. 342,242, Jan. 25, 1982, Pat. No. 4,485,674. This application Oct. 17, 1984, Ser. No. 661,844

The portion of the term of this patent subsequent to Jul. 6, 1994, has been disclaimed.

Int. Cl.[4] G01N *21/86*

U.S. Cl. 250—560 **20 Claims**



1. A method of developing a wrapping profile, or winding signature, for a tape web segment adapted to be wrapped upon a prescribed reel, this method being adapted to enhance computer tape file security so that each time such a web is wound upon a reel, the winding mode, after repeated windings, is assumed to leave the array of wrapped web edges in a unique edge wrap profile represented by the position of each winding edge as sighted radially along one side of the reel, such a profile constituting the "winding signature", this method involving:

providing radiant energy beam means automatically scanning the relative positions of these web-edges and detecting reflections therefrom as a "winding signature", and also providing associated means for electronically representing and storing these position values as a prescribed encoded set of signature-representing signals each time the web is wound; this means being adapted to automatically make such "signature" representations available for use in monitoring unspooling and respooling operations.

4,565,928

PHOTO ELECTRO TRANSDUCER DEVICE

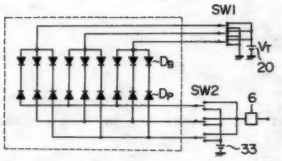
Hideaki Yamamoto, Tokorozawa; Toru Baji, Kokubunji; Toshihisa Tsukada, and Akira Sasano, both of Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Hitachi, Ltd., both of Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,403

Claims priority, application Japan, Sep. 30, 1981, 56-153724

Int. Cl.[4] H01J *40/14*

U.S. Cl. 250—578 **16 Claims**



1. A photo electro transducer device including:

a plurality of first wiring conductors formed on an insulating substrate in the form of a one-dimensional array;

a plurality of photo electro transducing elements respectively formed on each of said first wiring conductors;

a plurality of second wiring conductors for dividing said photo electro transducing elements into at least two groups each having equal numbers of photo electro transducing elements and for electrically connecting one end of each of said transducing elements belonging to each group with each other, said second wiring conductors being the same in number as the number of said groups;

a first bias voltage source;

a first electric circuit for electrically connecting a predetermined one of said second wiring conductors to said first bias voltage source to select a predetermined one of said groups of photo electro transducing elements and for electrically connecting the remaining ones of said second wiring conductors to a grounding point;

a plurality of third wiring conductors for electrically connecting the other end of each of said photo electro transducing elements located in the same respective position in each of said groups with each other, said third wiring conductors being the same in number as the number of said transducing elements belonging to each group;

a second bias voltage source; and

a second electric circuit for electrically connecting a selected one of said third wiring conductors connected to photo electro transducing elements of said selected group of said photo electro transducing elements to a read circuit and for electrically connecting the remaining ones of said third wiring conductors to said second bias voltage source;

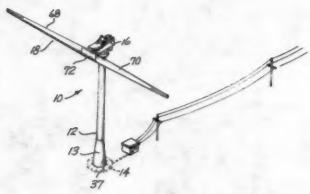
wherein said first, second and third wiring conductors are formed on said insulating substrate, and

wherein each of said photo electro transducing elements has two semiconductor layers formed on said first wiring conductors and separated from each other, one of said semiconductor layers being provided between said first and second wiring conductors to form a blocking diode and the other semiconductor layer being provided between said first and third wiring conductors to form a photo diode.

4,565,929
WIND POWERED SYSTEM FOR GENERATING ELECTRICITY

Joseph M. Baskin, Mercer Island; Gary E. Miller, Tukwila, and Wayne Wiesner, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1983, Ser. No. 537,750
Int. Cl.[4] F03D *1/06*
U.S. Cl. 290—44 **18 Claims**



1. A wind turbine system for generating electricity, comprising:

a wind turbine rotor;

a rotor shaft connected to said hub for rotation with said wind turbine rotor;

a step-up transmission having a low speed input connected to said rotor shaft and a high speed output;

a rotary pole amplitude modulated induction machine having a rotor that is connected to the output of said transmission, said machine being operable as a generator at a plurality of discreet speeds of rotation;

wind speed responsive switch means for changing speed of operation of said induction machine; and

wherein said wind turbine rotor comprises an elongated central hub with no twist having rounded edges and a substantially constant thickness between the edges;

a pair of fixed pitch essentially straight blades, each blade extending radially outwardly from said hub in a direction diametrically opposite from the other blade;

each said blade having a mid-section of airfoil cross section positioned radially outwardly of said central hub portion, and a tip section of airfoil cross section positioned radially outwardly of the mid-section;

each said blade smoothly changing from the substantially constant thickness and rounded edge shape of the central hub portion into an airfoil cross section as it extends radially outwardly from the central hub portion;

each blade first changing to first a plus twist and then a zero twist and then a minus twist as it extends radially outwardly;

each said blade tapering in thickness and chord as it extends radially outwardly from a location in its mid-section through its tip section; and

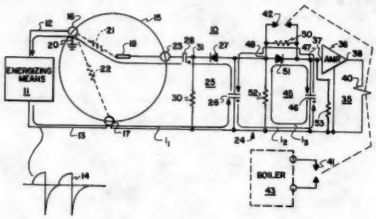
wherein the tip section of each said blade includes a sculptured tip end portion which decreases in thickness as it extends radially outwardly , said tip portion having an aerodynamic cross-sectional shape which progressively decreases in size, and having a leading edge which progressively sweeps rearwardly.

4,565,930
BOILER LOW WATER SENSING SYSTEM UTILIZING ENERGY TRANSFER NETWORK MEANS FOR DELAY

James I. Bartels, Hudson, Wis., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Jun. 1, 1984, Ser. No. 616,101
Int. Cl.[4] G08B *29/00;* **H01H** *35/18*
U.S. Cl. 307—118 **5 Claims**

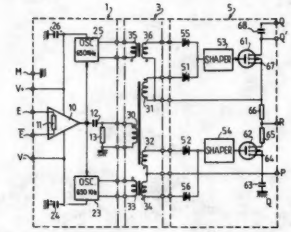
1. A low water sensing system in a boiler, including: energizing means having a bidirectional and periodic output of voltage; probe means adapted to make contact between water in a boiler and control circuit means; said control circuit means having input means connected between said probe means and said energizing means; said control circuit means further having output means responsive to the presence or absence of water in said boiler to in turn operate said output means for operation of said boiler; said input means including a pair of capacitors and a diode connected in series circuit to allow a current to flow to charge a first of said capacitors when water is present between said probe and said boiler with said diode blocking a reverse flow of current to said first capacitor; energy transfer network means having an input connected across said first capacitor and said network means having a third capacitor as an output; said third capacitor connected to said control circuit output means; and said energy transfer network means further including a resistor connecting said first capacitor and said third capacitor to controllably transfer energy from said first capacitor to said third capacitor to operate said control circuit output means upon the detection of water for a variable period of time.



4,565,931
ISOLATED AMPLIFIER CIRCUIT FOR AMPLIFYING PULSES, IN PARTICULAR FOR A HIGH VOLTAGE OUTPUT

Michel J. R. Fumey, Saint-Cloud, France, assignor to Electronizue Serge Dassault S.A., Paris, France

Filed Jan. 16, 1985, Ser. No. 691,776
Claims priority, application France, Jan. 16, 1984, 84 00629
Int. Cl.[4] H03K *5/00;* **H01F** *27/00;* **H03F** *3/217*
U.S. Cl. 307—262 **6 Claims**



1. An isolated amplifier circuit for amplifying pulses, in particular for a high voltage output, the amplifier comprising a low voltage input stage connected via transformers to a high voltage output stage, and including the improvement wherein:

the transformers comprise a central transformer having one primary winding and two oppositely-wound secondary windings, and two end transformers each having a primary winding and a secondary winding;

the low voltage input stage comprises an input amplifier, a differentiator and two oscillators, the amplifier output being fed via the differentiator to the primary winding of the central transformer and being connected to both oscillators in such a manner as to actuate one or other of the two oscillators depending on its polarity, each of the

oscillators being connected to the primary winding of a respective one of the two end transformers; and

the output stage comprises two controllable switches connected symmetrically in series about a mid point, each of the switches being controlled, via a respective shaping circuit, by a respective one of the secondary windings of the central transformer and also by the secondary winding of a respective one of the end transformers.

4,565,932

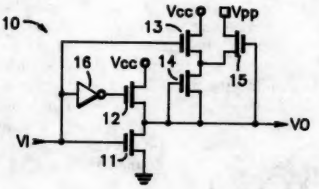
HIGH VOLTAGE CIRCUIT FOR USE IN PROGRAMMING MEMORY CIRCUITS (EEPROMS)

Clinton C. K. Kuo, and Sam Dehganpour, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1983, Ser. No. 566,610

Int. Cl.[4] H03K *17/10, 3/027, 17/687;* **G11C** *11/40*

U.S. Cl. 307—264 **11 Claims**



1. A high voltage circuit, comprising:

a first transistor having a control electrode for receiving an input signal, a first current electrode coupled to a first power supply terminal, and a second current electrode;

a load coupled between an output node and the second current electrode of the first transistor; and

a second transistor having a control electrode coupled to the output node, a first current electrode coupled to a high voltage power supply terminal, and a second current electrode coupled to the second current electrode of the first transistor.

4,565,933

CIRCUIT FOR GENERATING RAPID PULSES

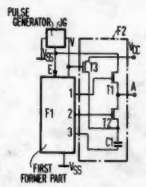
Focko Frieling, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,986

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217264

Int. Cl.[4] H03K *17/04, 17/693*

U.S. Cl. 307—269 **10 Claims**



1. Integrated pulse former constructed in MIS circuit technology and connected to a first supply potential as well as to a second supply potential serving as a reference potential, and acted upon by control pulses from a pulse generator, comprising a first former part and a second former part both being connected to the pulse generator and directly addressed by the control pulses from the pulse generator, said first former part being connected to both the first and the second supply potentials and having three signal outputs, said second former part being additionally controlled via said three signal outputs of said first former part and being connected only to the first one of the two supply potentials, a first one of said signal outputs connected to and controlling a gate of a first field-effect transistor having a source-drain path directly connected, on one hand, to an output of the pulse generator furnishing the control pulses and, on the other hand, to a signal output of said second former part for furnishing secondary pulses, a second one of said three signal outputs of said first former part being connected to and controlling a gate of a second field-effect transistor having a source-drain path connecting said signal output of said second former part to one terminal of a capacitor having another terminal connected to the third one of said three signal outputs of said first former part, said one terminal of said capacitor connected to said second field-effect transistor being also connected via a third field-effect transistor to the first supply potential, said third field-effect transistor having a controllable gate, means connected to said gate for controlling said gate, said third field-effect transistor having a source-drain path connecting the first supply potential to a circuit node located between the source of said second field-effect transistor and said one terminal of said capacitor, said first former part being of such construction that, due to a rising edge of the control pulses from the pulse generator in said first former part:

(a) at said first signal output of said first former part, a first potential initially maintained at a value between the two supply potentials is increased to a peak value beyond that of the first supply potential immediately at the start of the rising edge of the respective control pulse and then immediately lowered to the value of the second supply potential;

(b) at said second signal output of said first former part, a second potential initially having a value equal to that of the second supply potential is first brought to the value of the first supply potential immediately at the start of the rising edge of the respective control pulse and then, with increased rate of rise, to a value beyond that of the first supply potential which is also maintained after the falling edge of the respective control pulse; and

(c) at said third signal output of said first former part, a third potential initially having a value equal to that of the second supply potential is raised with delay on the rising edge of the respective control pulse to the value of the first supply potential; and

means provided for effecting a return of said first, second and third potentials at the respective signal outputs of said first former part to a state prevailing before onset of a final control pulse, after the end of the falling edge of the control pulses from the pulse generator and before onset of the rising edge of the next control pulse.

4,565,934

DYNAMIC CLOCKING SYSTEM USING SIX CLOCKS TO ACHIEVE SIX DELAYS

Ebbin R. Southerland, Jr., Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1982, Ser. No. 353,672

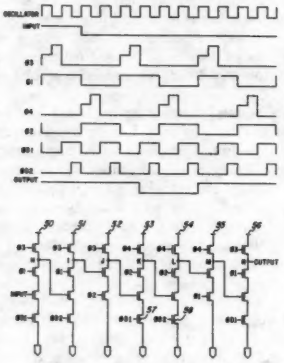
Int. Cl.[4] H03K *19/096, 5/135, 5/153*

U.S. Cl. 307—481 **2 Claims**

1. A dynamic metal oxide semiconductor field effect device clocking circuit to produce an output at a fixed time interval after receiving an input signal at an input node comprising:

a first circuit means responsive to a first precharge signal having a repetitive first active state, a first clocking signal having a repetitive active state coincident with said first active state of said first precharge signal, a second clocking signal having a repetitive active state coincident with the inactive state of said first clocking signal, a first discharge signal having an active state when neither said first precharge signal nor a second precharge signal which is noncoincident with said first precharge signal is active and a second discharge signal having an active state during a

final portion of the active state of said first discharge signal, having a first input node responsive to said input signal, a first output node, a first branch connected to said first input node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, said first clocking signal, said input signal and said first discharge signal, respectively, said junction of the first branch field effect devices responsive to the first precharge signal and to the first clocking signal providing the first branch output; a second branch connected to said first branch including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, said first clocking signal, the signal at said first branch output and said second discharge signal, respectively, said junction of the second branch field effect devices responsive to the first precharge signal and to the first clocking signal providing the second branch output; and a third branch connected to said second branch and providing an output on said first output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, the signal at said second branch output and said second



clocking signal, respectively, for generating an output on said first output node, at the junction of the third branch field effect devices responsive to the first precharge signal and to the signal at the second branch output, a predetermined interval after receiving an input on said first input node;

a second circuit means responsive to a second precharge signal having a repetitive second active state noncoincident with said first active state, said first clocking signal, said second clocking signal, said first discharge signal and said second discharge signal, having a second input node connected to said first output node and a second output node, a fourth branch connected to said first output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said second precharge signal, said second clocking signal, the signal at said first output node and said first discharge signal, respectively, said junction of the fourth branch field effect devices responsive to the second precharge signal and to the second clocking signal providing the fourth branch output; a fifth branch connected to sad fourth branch including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said second precharge signal, said second clocking signal, the signal at said fourth branch output and said second discharge signal, respectively, said junction of the fifth branch field effect devices responsive to the second precharge signal and to the second clocking signal providing the fifth branch output; and a sixth branch connected to said fifth branch and providing an output on said second output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said second precharge signal, the signal at sad fifth branch output and said first clocking signal, respectively, for generating an output on said second output node, corresponding to the junction of the sixth branch field effect devices responsive to the second precharge signal and to the fifth branch output, a predetermined interval after receiving an input on said second input node, thereby generating an extended delay from the signal applied to said first input node; and

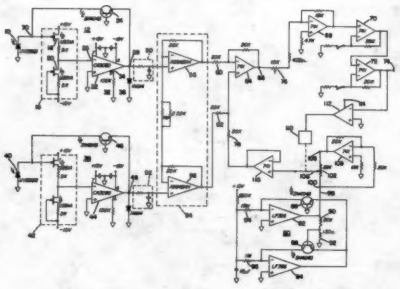
a third circuit means having a seventh branch connected to said second output node including a plurality of field effect devices having their source drain paths connected in series and each field effect device having a respective gate responsive to said first precharge signal, said first clocking signal, the signal at said second output node and said first discharge signal, said seventh branch connected to said second output node for isolating the output of said second output node and producing said dynamic output having said fixed delay at the junction of the seventh branch field effect devices responsive to the first precharge signal and the first clocking signal.

4,565,935

LOGARITHMIC CONVERTER CIRCUIT ARRANGEMENTS

Norman F. Rolfe, Carlisle, Mass., assignor to Allied Corporation, Morristown, N.J.

Filed Jul. 22, 1982, Ser. No. 400,688
Int. Cl.[4] G06G *7/24*
U.S. Cl. 307—491 **23 Claims**



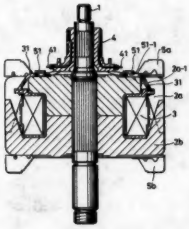
1. A logarithmic converter circuit comprising an input to which a data signal may be applied, a logarithmic transfer function generating device connected to said input, a transconductance amplifier connected in parallel with said logarithmic transfer function generating device, and an output, said circuit generating a signal at said output that is a logarithmic function of the data signal applied to said input.

4,565,936

ROTOR FOR ROTARY MACHINE

Takashi Ikegami, and Masakazu Mori, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,586
Claims priority, application Japan, Sep. 5, 1983, 58-138993[U]
Int. Cl.⁴ H02K *9/06*
U.S. Cl. 310—62 **2 Claims**



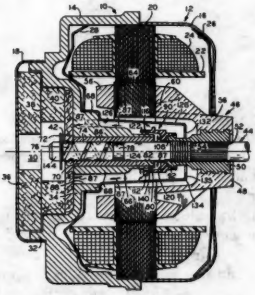
1. A rotor for rotary machines, comprising:
a rotary shaft;
magnetic field cores fixed to said rotary shaft and having an annular recessed portion;
a magnetic field coil received within said recessed portion;
slit rings mounted on said rotary shaft at one side of said magnetic field cores for supplying electric current to said field coil;
lead wires introduced at outsides of said magnetic field cores from said magnetic field coil and connected via terminals to said slip rings; and
a fan fixed at one side of said magnetic field cores and having holding portions for firmly holding said lead wires;
wherein said holding portions are formed by recessed portions formed on said fan.

4,565,937

DYNAMOELECTRIC MACHINE HAVING IMPROVED LUBRICANT SLINGER

Richard F. Uhen, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 29, 1984, Ser. No. 584,622
Int. Cl.⁴ H02K *7/08*
U.S. Cl. 310—90 **20 Claims**



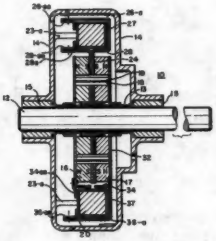
1. A dynamoelectric machine comprising: a stator; a rotor including a shaft; bearing means supporting said shaft, along a bearing and shaft interface, for rotation relative to the stator, with said shaft extending out of at least one end of said bearing means; a lubricant reservoir; means associated with said shaft for pumping lubricant from the reservoir along the shaft and bearing interface in a first axial direction and out of an end of said bearing means; lubricant slinger means, mounted on said shaft for rotation therewith, for throwing radially outwardly from said shaft lubricant pumped out of said end of said bearing means; said slinger means having flight means projecting from a radially outer peripheral surface of said slinger means and skewed in an axial direction for impelling, with an axial component of velocity opposite to the first axial direction, the lubricant pumped out of said end of said bearing means.

4,565,938

PERMANENT MAGNET ROTOR TOROIDAL GENERATOR AND MOTOR

Moharram M. Fawzy, Malvern, Pa., assignor to Intra-Technology Associates, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 503,914, Jun. 13, 1983, Pat. No. 4,459,501. This application Jul. 9, 1984, Ser. No. 629,102
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.⁴ H02K *21/12*
U.S. Cl. 310—156 **12 Claims**



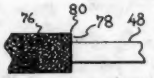
1. An electromechanical device, comprising:
a housing, including bearing means supporting a rotatable shaft;
a magnetized disc magnet means;
at least one first pole shoe positioned to contact said magnet means at a first polarity and having portions extending radially outward to define a pair of virtual pole chambers of said first polarity;
at least one second pole shoe positioned to contact said magnet means at a second polarity and having portions extending radially outward to define a pair of virtual pole chambers of said second polarity;
a toroid stator mounted on said housing and having windings thereon, said stator being positioned annularly around said disc magnet means such that the virtual poles surround portions of said windings with alternating fields of polarity.

4,565,939

EVERTED KNITTED TUBE INSULATION FOR WINDINGS OF DYNAMOELECTRIC MACHINES

Roy L. Balke, and Jerome R. Filipowski, both of Erie, Pa., assignors to General Electric Company, Salem, Va.

Filed Aug. 16, 1984, Ser. No. 641,571
Int. Cl.⁴ H02K *1/00;* **H01B** *7/00*
U.S. Cl. 310—177 **12 Claims**



1. Apparatus for insulating a conductor bar comprising:
a knitted fabric tube;
a cut end on said knitted fabric tube;

said knitted fabric tube being everted to provide a purse mouth at said cut end;

said knitted fabric tube being slipped over said conductor bar with an end of said conductor bar protruding therefrom; and

said purse mouth being effective to urge said cut end toward said conductor bar whereby a close fit is obtained between said cut end and said conductor bar.

4,565,940

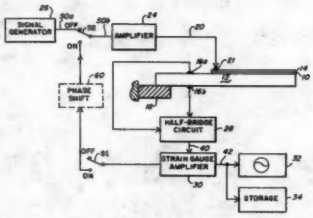
METHOD AND APPARATUS USING A PIEZOELECTRIC FILM FOR ACTIVE CONTROL OF VIBRATIONS

James E. Hubbard, Jr., Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 14, 1984, Ser. No. 640,759

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—326 **26 Claims**



1. A method of damping vibrations in a member, comprising the steps of:

a. applying a distributed parameter film means of piezoelectric material for sensing and damping vibration in said member in cooperative relationship with the surface of said member and;

b. sensing, with said film means, vibrations in said member and producing with said film means a first electrical signal proportional to said sensed vibration;

c. applying to said film means a second electrical signal derived from said first signal of proper amplitude frequency and phase to dampen said vibrations in said member.

4,565,941

OSCILLATORY DRIVE MECHANISMS FOR A RING LASER GYRO

Peter C. Ridgway, Laleham, and John A. Geen, Bracknell, both of England, assignors to British Aerospace PLC, London, England

Filed Oct. 22, 1982, Ser. No. 436,335

Claims priority, application United Kingdom, Oct. 28, 1981, 8132437

Int. Cl.⁴ F16F *1/18*; H01L *41/08*

U.S. Cl. 310—328 **14 Claims**

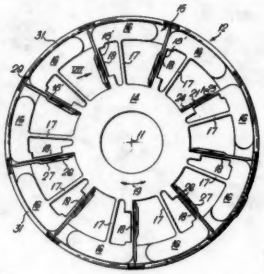
1. An oscillatory drive mechanism for a member to be driven comprising:

a flexural element having first and second portions, the first portion being adapted to be rigidly attached to a datum with respect to which the member is to be driven and the second portion being adapted to be rigidly attached to the member, the first and second portions being interconnected by at least one drive unit;

the drive unit comprising first and second interconnecting members, and drive means bonded to the second interconnecting member;

the second interconnecting member having a dimension generally in the direction of drive, which is less than the corresponding dimension of the first interconnecting member, the first interconnecting member, in the main, determining the spring characteristics of the flexural element;

the mechanism being in the form of a wheel with one of the first portion and the second portion forming the hub, and the other portion forming a generally circumferential portion of the wheel with the first and second interconnecting members of each of the drive units extending generally radially between the hub and circumferential portions;



the drive means being operable, when energized, to flex the second interconnecting member which in turn moves the second portion of the flexural element relative to the first portion so as, in use, to oscillate the member to be driven.

4,565,942

ENERGY TRAPPED PIEZOELECTRIC RESONATOR LIQUID SENSOR

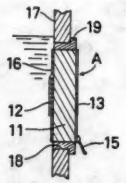
Katsumi Sakai, Kanazawa, and Isao Toyoshima, Ishikawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 29, 1984, Ser. No. 626,123

Claims priority, application Japan, Jul. 1, 1983, 58-103324[U]; Jul. 1, 1983, 58-103325[U]

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—338 **2 Claims**



1. A liquid sensor, comprising:

a piezoelectric substrate having a first planar side for contacting a liquid, and a second planar side opposite said first side, bounded by a periphery, mountable on a wall on said periphery;

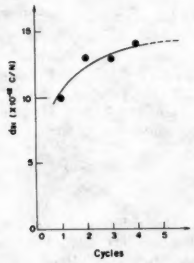
at least one first electrode located on said first side and at least one second electrode located on said second side so that said substrate vibrates in the direction extending between said first and second sides in an energy-trapped manner in response to electric excitation applied across said at least one first electrode and said at least one second electrode when said substrate is mounted at said periphery to a wall, said substrate, said at least one first electrode and said at least one second electrode thereby defining an energy-trapped type resonant element; and

a liquid-proof coating covering said first side including the at least one first electrode.

4,565,943
PROCESS FOR PREPARING POLYMERIC PIEZOELECTRIC MATERIAL

Junichi Sako, Osaka; Toshiharu Yagi, Hyogo; Yoshihide Higashihata, and Kouji Fukuyama, both of Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed May 2, 1984, Ser. No. 606,136
Claims priority, application Japan, May 9, 1983, 58-81480
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—357 **22 Claims**



1. A process for preparing a polymeric piezoelectric material which comprises a vinylidene fluoride containing polymer, comprising:

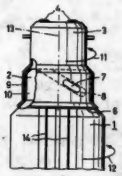
locating said polymer between two electrodes; and

polarizing said polymer by applying at least two cycles of an alternating electric field, except a rectangular wave, to the polymer while said polymer is located between said two electrodes.

4,565,944
ELECTRIC LAMP

Johannes H. H. Beurskens, and Wilhelmus H. F. Winkelmolen, both of Weert, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1983, Ser. No. 556,208
Claims priority, application Netherlands, Dec. 7, 1982, 8204723
Int. Cl.⁴ H01J *5/48, 5/50*
U.S. Cl. 313—318 **4 Claims**

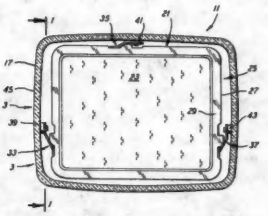


1. An electric lamp comprising a blown glass lamp envelope having a neck-shaped portion, a bayonet lamp cap, and current-supply conductors extending from contacts on the lamp cap through the wall of the lamp envelope to an electric element arranged inside the lamp envelope; which lamp cap surrounds at least part of the neck-shaped portion and is coupled to the envelope, by means of circumferentially distributed projections and respective guides cooperating therewith, such that an edge of the lamp cap abuts the envelope, the coupling being locked against displacement by means of a solidified mass, characterized in that the guides are so arranged that the coupling is established by relative rotation in the counterclockwise direction between the lamp cap and the lamp envelope, the abutting of the cap against the envelope stopping further rotation.

4,565,945
DEFLECTION LIMITING MEANS FOR CRT MASK SUPPORT MEANS

Stanley L. Pawlikowski, Seneca Falls; Carl W. Penird, Waterloo, and Richard A. Tamburrino, Auburn, all of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed May 11, 1983, Ser. No. 493,493
Int. Cl.⁴ H01J *29/07, 29/80*
U.S. Cl. 313—404 **9 Claims**



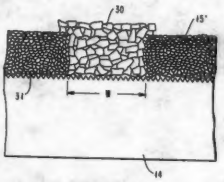
1. An improvement in a cathode ray tube having a viewing panel with face and sidewall portions and a shadow mask-frame assembly positioned adjacent the inner screen-supporting surface of the face portion, a plurality of spaced apart support means fixedly oriented on a perimetrical sidewall portion of the frame in a manner to mate with positioning studs embedded in and protruding from the sidewall portion of the viewing panel, each of said support means being an elongated metallic member incorporating an off-center transverse transitional bend therein to demarcate a basal seating portion from a longer integrally opposed arm-like resilient portion having a terminally-related stud accepting aperture formed therein, said improvement comprising:

a structural modification of the perimetrical sidewall portion of the mask framing member in the region of each support means in the form of a localized outwardly raised portion of said sidewall under the resilient portion and adjacent the seating portion of each support means for limiting deflection of the resilient portion and preventing permanent deformation of the support means during tube fabrication.

4,565,946
COLOR CATHODE RAY TUBE WITH INFRARED EMITTING PHOSPHOR IN SCREEN

William H. Barrett, and Andre B. Minn, both of Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1983, Ser. No. 495,882
Int. Cl.⁴ H01J *29/07, 29/20, 29/32*
U.S. Cl. 313—408 **6 Claims**



1. A color producing cathode-ray tube comprising, within an evacuated envelope, an image screen provided with a plurality of groups of elemental phosphor areas, each group of phosphor areas having a different color radiation characteristic

and the groups being interspersed so as to form repetitive clusters of areas including one area from each group, electron gun means for projecting a corresponding plurality of electron beams toward an image screen, deflection means for causing the electron beams to scan the image screen in synchronism, and a mask disposed adjacent the screen between the latter and the electron gun means and having a plurality of apertures so arranged as to constrain each beam to strike the elemental phosphor areas of only one respective group,

each of the elemental phosphor areas being spaced on the screen from all adjacent such areas and the apertures in the shadow mask being individually larger than the elemental phosphor areas so that each beam striking any given elemental phosphor area of the respective group additionally falls on a portion of the screen which spaces that area from the adjacent areas,

the image screen further being provided with a material emissive of invisible radiation when struck by an electron beam, said material being infrared emissive material which is absorptive of visible light and which is provided over substantially the entire area of the screen not occupied by the elemental phosphor areas, said material being located in the spaces between the elemental phosphor areas and adjacent each elemental phosphor area on at least part of the said additional portion of the screen struck by the same electron beam as that which strikes the said area,

wherein the infra-red emissive material comprises particles of an infra-red phosphor pigmented with a visible-light absorbing material, the particles of the infra-red phosphor being substantially smaller in size than the particles of the elemental phosphor areas.

4,565,947

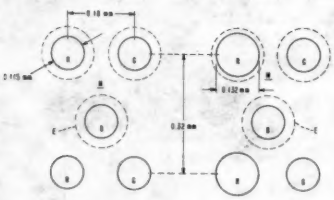
COLOR CATHODE RAY TUBE FOR USE WITH A LIGHT PEN

Andre B. Minn, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,425

Int. Cl.[4] H01J *29/20, 29/32*

U.S. Cl. 313—467 **6 Claims**



1. In a shadow mask cathode ray tube for use with a light pen, the improvement wherein the elemental phosphor areas emissive of red light comprise a blend of a red-emissive phosphor with silver-activated cadmium sulphide (CdS:Ag), the CdS:Ag being present in an amount from 10% to 30% by weight of the blend.

4,565,948

FLUORESCENT LAMP

Yoshio Kimura, Yokohama; Kenji Terashima, Chigasaki; Masao Asada, and Satoshi Sugano, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

PCT No. PCT/JP82/00234, § 371 Date Feb. 16, 1983, § 102(e) Date Feb. 16, 1983, PCT Pub. No. WO82/04439, PCT Pub. Date Dec. 23, 1982

PCT Filed Jun. 18, 1982, Ser. No. 474,581

Claims priority, application Japan, Jun. 18, 1981, 56-93033

Int. Cl.[4] H01J *1/63*

U.S. Cl. 313—487 **1 Claim**

1. A fluorescent lamp having a phosphor film comprising:

a blue-emitting phosphor consisting essentially of at least one of a divalent europium activated chlorophosphate phosphor having a general formula $3(M, Eu)_3(PO_4)_2.M'Cl_2$ wherein M and M' are independently at least one of strontium (Sr), calcium (Ca) and barium (Ba); and a divalent europium activated haloborophosphate phosphor having a general formula:

$$x(M_{1-p}.Eu_p.O).yP_2O_5.aM'X_2.bB_2O_3$$

wherein M and M' are independently at least one of strontium (Sr), calcium (Ca) and barium (Ba); X is at least one of chlorine (Cl), fluorine (F) and bromine (Br); and $2.7 \leqq x \leqq 3.3$, $0.50 \leqq y \leqq 1.50$, $0.10 \leqq a \leqq 0.50$, $0.01 \leqq b \leqq 0.50$, and $0.001 \leqq p \leqq 0.20$;

a green-emitting phosphor consisting essentially of a cerium and terbium activated silicophosphate phosphor of a general formula:

$$(Re_{1-c-d-3e}Tb_cCe_dA_{3e})_2O_3.qP_2O_5.rSiO_2$$

wherein Re is at least one of yttrium (Y), lanthanum (La) and gadolinium (Gd); A is at least one of lithium (Li), sodium (Na), potassium (K), rubidium (Rb), and cesium (Cs); and $0<c$, $0<d$, $5\times10^{-2} \geqq e \geqq 1\times10^{-5}$, $0<c+d+3e<1$, $0<q$, and $0<r$; and

a red-emitting phosphor consisting essentially of a trivalent europium activated yttrium oxide phosphor having a general formula $(Y, Eu)_2O_3$, wherein

the phosphor film comprises 1 to 38% by weight of the blue-emitting phosphor, 13 to 73% by weight of the green-emitting phosphor and 15 to 65% by weight of the red-emitting phosphor based on 100% by weight of a total weight of the phosphors, and wherein said lamp exhibits a starting voltage at 21° C. of 88 V or less.

4,565,949

TELEVISION RASTER DISTORTION CORRECTION CIRCUIT

Peter E. Haferl, Adliswil, Switzerland, assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 19, 1984, Ser. No. 672,955

Claims priority, application United Kingdom, Nov. 25, 1983, 8331573; Feb. 29, 1984, 8405317

Int. Cl.[4] H01K *29/56*

U.S. Cl. 315—371 **17 Claims**

1. A deflection apparatus that includes a raster distortion correction circuit, comprising:

a deflection winding;

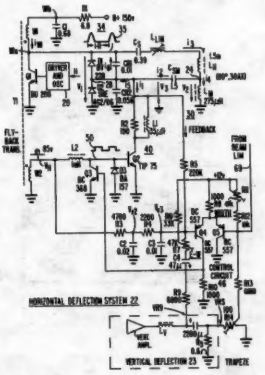
means coupled to said deflection winding for developing a trace voltage;

first switching means for applying said trace voltage to said deflection winding to generate a trace current of a deflection current in said deflection winding during a trace interval, and for developing at a terminal thereof a retrace interval defining retrace voltage;

an impedance coupled to said deflection winding to form first and second current paths of said deflection current in first and second branches of said impedance, respectively;

a source of modulation rate voltage;

second switching means coupled to said first current path for developing in accordance with said modulation rate voltage a raster distortion correction first voltage that is combined with said trace voltage to control said trace current during the trace interval, said second switching means reducing the impedance in said first current path during a portion of the retrace interval that varies in accordance with said modulation rate voltage to a lower value relative to the higher value of said impedance in said first current path that is maintained higher by said second switching means from the beginning of the retrace interval and until the beginning time of said portion;



a first retrace capacitance coupled to said terminal of said first switching means for developing across said first retrace capacitance a first portion of said retrace voltage; and

third means responsive to the current in said first current path of said impedance for controlling in accordance therewith the amplitude of said first portion of said retrace voltage relative to that of said retrace voltage, wherein said first portion of said retrace voltage is coupled to said deflection winding during the retrace interval for generating in accordance therewith a retrace scanning current in said deflection winding.

4,565,950

SERVO SYSTEM

Mitsutoyo Kikuno, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 548,795

Claims priority, application Japan, Nov. 9, 1982, 57-196615; Nov. 26, 1982, 57-208007

Int. Cl.⁴ H02P 7/74

U.S. Cl. 318—85 **5 Claims**

1. A servo system for moving at least two movable objects to positions which are respectively predetermined therefor, said servo system comprising:

drive start signal generator means for generating independent drive start signals which respectively cause the movable objects to start moving;

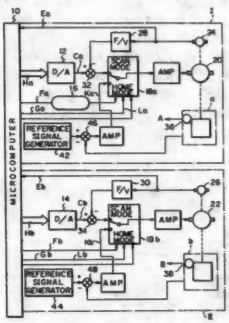
servo motor means for driving the movable objects in response to the independent drive start signals;

pulse signal generator means for generating pulse signals which respectively represent amounts of movement of the movable objects;

reference signal generator means for generating independent reference velocity signals for respectively moving the movable objects;

adder means for adding the pulse signals to the reference velocity signals associated therewith, the servo motor means being rotated at a velocity which corresponds to an output of the adder means;

sync signal generator means for generating independent sync signals when the movable objects individually reach the predetermined positions;



detector means for detecting a time lag between the sync signals; and

prevention means for preventing said time lag from being developed.

4,565,951

PROCESS AND ELECTRONIC DEVICE FOR THE CONTROL AND REGULATION OF THE SUPPLY CURRENT IN AN ELECTRIC MOTOR FED FROM A FIXED VOLTAGE DIRECT CURRENT SOURCE

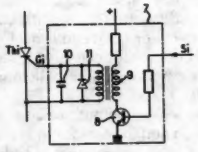
Jean C. Petit, 50, Rue Robert Gaillard, 86100 Chatellerault, France

Filed Dec. 21, 1984, Ser. No. 684,780

Claims priority, application France, Dec. 21, 1983, 83 20511

Int. Cl.⁴ H02P 3/14

U.S. Cl. 318—317 **7 Claims**



1. A process for electronically controlling and regulating the supply current in an electric motor fed from a fixed voltage, direct current source by means of a chopper comprising:

generating a measuring voltage, representing the current passing through the motor, and a command voltage representing the command current required to be imposed on the motor; comparing said measuring voltage and said command voltage; applying the results of said comparison to a memory condenser to produce a progressive positive or negative charge voltage in response thereto; generating a reference voltage; comparing said progressive charge voltage with said reference voltage; determining a first time delay period after said progressive charge voltage exceeds said reference voltage; generating a conduction initiation signal for the chopper upon expiration of said first time delay period to initiate application of conduction current to a motor connected to the chopper; reducing the difference between said measuring voltage and said command voltage; determining a second time delay period after said progressive charge voltage falls below said

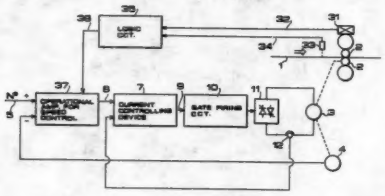
reference voltage; and generating a conduction cutoff signal for said chopper upon expiration of said second time delay period for terminating said conduction current.

4,565,952

SPEED CONTROLLING DEVICE FOR ROLLING MILLS

Akira Kaiko, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,727
Claims priority, application Japan, Nov. 4, 1983, 58-207011
Int. Cl.[4] H02P 5/00
U.S. Cl. 318—345 R **3 Claims**



1. A speed controlling device for a rolling mill, comprising:

a speed detector for detecting the speed of an electric motor for rolls of said rolling mill;

a rolling pressure detector for detecting a rolling pressure applied to said rolls and for detecting introduction of a work to be rolled between said rolls to output an introduction signal;

a speed controlling circuit responsive to an error of an output signal of said rotational speed detector from a prescribed reference speed signal and to the introduction signal for changing a gain and a time constant of a speed control system of said electric motor;

a thyristor device for controlling an electric current flowing through said electric motor;

a current detector for detecting an electric current flowing through said electric motor;

a current controlling circuit responsive to an error of the output signal of said current detector from a current instruction to said electric motor for outputting a firing phase angle signal to said thyristor device to cancel the error;

a work presence detector for detecting if the work to be rolled is present or not at a time directly before the work is introduced between said rolls;

a circuit responsive to an output of said work presence detector and also to an output of said rolling pressure detector for outputting signals respresentative of rolling pressure before and after introduction of the work to be rolled; and

means responsive to output signals of said work presence detector representative of presence or absence of the work to be rolled before and after introduction of the work to be rolled and also to an output signal of said rolling pressure detector for changing the gain and the time constant of said speed controlling circuit to reduce the amount of drop of the speed of said rolls upon introduction of the work to be rolled and to reduce the speed restoration time.

4,565,953

TWELVE PULSE AC MOTOR DRIVE

Paul M. Espelage, Salem, and James M. Nowak, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Jul. 2, 1984, Ser. No. 626,982
Int. Cl.[4] H02P 5/16
U.S. Cl. 318—345 E **10 Claims**

1. A control for independent parallel first and second AC to DC converters having controlled switches coupled to a DC load, said control comprising:

first fire counter means for receiving the time to fire the next controlled switch in the first AC to DC converter;

second fire counter means for receiving the time to fire the next controlled switch in the second AC to DC converter;

first buffer means responsive to said first fire counter means timing out for firing the next controlled switch in the first AC to DC converter;

second buffer means responsive to said second fire counter means timing out to fire the next controlled swith in the second AC to DC converter;

means for generating a current setpoint representing the desired level of current output from said converters;

means for providing a first interrupt signal at the time of firing a switch of said first AC to DC converter;

means for providing a second interrupt signal at the time of firing a switch of said second AC to DC converter; and,

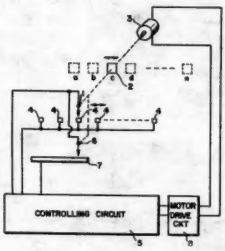
current regulator means responsive to said current setpoint and said first interrupt signal for determining and loading the time to go to fire the next controllable switch into said first fire counter means and responsive to said current setpoint and said second interrupt signal for determining and loading the time to go to fire the next controllable switch into said second firing counter means, said current regulator means comprising a single microcomputer.

4,565,954

MULTIPOSITION CONTROLLER

Kazuhiro Yamanishi, Higashiosaka, and Mino Mineo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 1, 1982, Ser. No. 445,988
Claims priority, application Japan, Dec. 2, 1981, 56-194063
Int. Cl.[4] G05D *3/12*
U.S. Cl. 318—603 3 Claims



1. A multiposition controller for moving an object to a desired one of a plurality of predetermined positions, comprising:

a means for driving said object;

a first switching means comprising a first movable contact which is movable in association with said object within a range corresponding to a movable range of said object, and a plurality of fixed contacts which are connected in common with a single output line and arranged along said movable range of said contact so as to correspond to said plurality of predetermined positions of said object and so as to be sequentially in contact with said first movable contact as said movable contact is moved, said first switching means being in an on state only when said first movable contact is in contact with one of said plurality of fixed contacts;

a second switching means for detecting a direction of movement of the object comprising a second movable contact which is movable in association with said first movable contact within a range corresponding to the movable range of said object and a single fixed contact extending along a portion of said movable range of said second movable contact including an end of said movable range of said second movable contact so as to be in contact with said second movable contact when said second contact is in a position which is within said portion of said movable range of said second movable contact, said second switching means being in an on state only when said second movable contact is in contact with said single fixed contact; and

a control means for producing a control signal for controllng said drive means in accordance with a signal from said single ouptut line of said first switching means and an externally provided position assigning signal;

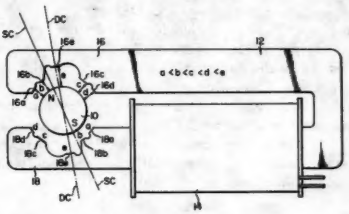
wherein said control means is further coupled to said second switching means for determining an initial position value by which values corresponding to said plurality of predetermined positions of said object are determined.

4,565,955

SYNCHRONOUS MOTOR DEVICE FOR TIMEPIECE

Susumu Kubota, Saitama, Japan, assignor to Rhythm Watch Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1983, Ser. No. 544,395
Claims priority, application Japan, Oct. 29, 1982, 57-190628
Int. Cl.[4] H02K *29/64, 21/00*
U.S. Cl. 318—696 5 Claims



1. A synchronous motor device for timepiece including a synchronous motor for timepiece having:

a rotor having a pair of magnetized rotor poles around its circumference;

a stator consisting of a pair of stator plates having a plurality of stator poles arranged around the vicinity of said rotor with separation of air gap; and

an energizing coil supplying alternating magnetic flux to said stator;

wherein said synchronous motor for timepiece comprises:

main stator poles being prepared with both of the stator poles at the facing position against the rotor shaft and mainly forming a static stable position of the rotor;

first supplementary stator poles being facingly positioned against the rotor shaft, being prepared with both of the stator poles at separate position from said main stator poles, forming a dynamic stable position of the rotor with the cooperation of said main stator poles, and having wider airgaps than said main stator poles; and

second supplementary stator poles being facingly positioned against the rotor shaft, being prepared in the vicinity of the dynamic stable position of the rotor in order to place a predetermined braking force on the rotor which rotates over the dynamic stable position, having wider air gaps than said main stator poles and said first supplementary stator poles;

whereby smooth self-starting rotation can be achieved.

4,565,956

FAST-ACTING SERVO DRIVE SYSTEM

Peter Zimmermann, Dieburg, Fed. Rep. of Germany, and John W. Teape, Cambridge, England, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 357,623, Mar. 12, 1982, abandoned.
This application Oct. 9, 1984, Ser. No. 658,466
Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120559
Int. Cl.[4] H02P *5/28*
U.S. Cl. 318—721 12 Claims

1. In a power servo system, particularly for a numerically controlled machine tool, a fast-acting servo drive system providing rated torque at any speed from speed zero having

a multiphase synchronous motor including

a magnetic rotor (17),

a stator (43) having a plurality of armature phase windings (L1, L2, L3),

current level and switching means (33, 35, 36, 37) controlling current flow through said windings;

rotor position sensing means (8, 15; 19) coupled to the rotor and providing rotor position output signals;

and switching control means connected to and controlled by

the rotor position output signals and controlling operation of the current level and switching means to provide switching in four-quadrant mode by the current level switching means, wherein

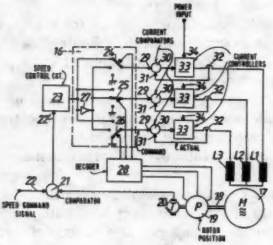
means are provided for generating an induced counter electromotive force (EMF) of essentially trapezoidal wave shape having rising and falling portions, connected by a flat or horizontal waveshape portion comprising

a plurality of armature core elements (43) in which the armature phase windings are inserted;

a plurality of field core elements (41) on the rotor (17) and providing a magnetic field,

at least one of the armature core elements and the field core elements being skewed or inclined,

the angle of skewing or inclination of the at least one of of the core elements and the armature pole coverage angles of the magnet core elements being relatively so positioned that said essentially trapezoidal wave shape of the induced electromotive force is obtained,



wherein the switching control means are connected to control said current level and said switching means to supply current (4, 5, 6, 7) to the phase windings under control of the rotor positioning means (19) in pulses of essentially square wave shape occurring only during the time of occurrence of the flat or horizontal portion of the trapezoidal counter electromotive force (EMF) voltages and extending, in time, essentially for the duration of occurrence of said flat or horizontal wave portion;

wherein the current level and switching means are controlling the current flow, in pulses (4, 7), through the phase windings to be of essentially constant value for the entire duration of said pulses at any rotary or angular position of the rotor; and

wherein the current level and switching means are additionally controlling and switching current flow to the respective current carrying windings such that the sum of the currents flowing in the respective windings is constant.

4,565,957

METHOD AND SYSTEM FOR STARTING A MOTOR-COMMUTATED SCR INVERTER

James R. Gary, Elk Grove Village, Ill.; Everett R. Geis, Orange, Calif.; Todd L. King, Buffalo Grove, and Daljit Singh, Elk Grove Village, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,625

Int. Cl.[4] H02P *5/40*

U.S. Cl. 318—723 **1 Claim**

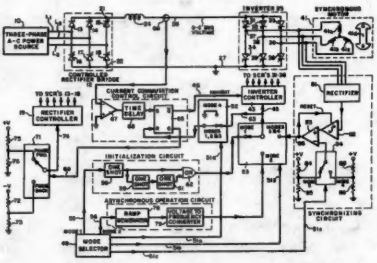
1. A starting system for an interter-motor system wherein a synchronous motor, having a stator and a rotor, is normally driven by the output a-c voltage developed by an inverter, which has a series of motor-commutated SCRs that are gated into conduction in predetermined pairs and in a prescribed sequence to conduct current to the motor, from an applied d-c bus voltage, and in response to received bus current, translated to the inverter over a d-c bus and a series-connected filter inductance from a controlled rectifier bridge to which is applied a-c line voltage, said starting system comprising:

means for sequentially gating the pairs of inverter SCRs at an increasing frequency to current pulse energize the motor to effect step-by-step rotation thereof at a faster and faster rate, the motor current being reduced to zero at the termination of each energizing pulse by controlling the rectifier bridge to force commutate the conducting pair of SCRs,

the bus current being decreased to zero, to force commutate the conducting SCRs, by controlling the rectifier bridge so that it will rapidly dissipate the energy that builds up and becomes stored in the filter and motor inductances when the bus current flows therethrough, thereby minimizi:ng the decay time of the bus current to zero to facilitate faster gating on of the next pair of SCRs in the sequence;

a synchronizing circuit, operative after the motor has reached a preset speed, for sensing only the motor voltage and for developing synchronizing pulses in response to that sensed motor voltage,

said synchronizing circuit including a rectifier for rectifying



the motor voltage, an integrator for integrating the rectified motor voltage, a comparator for comparing the integrated voltage with a reference voltage representing a preset threshold level, a synchronizing pulse being produced each time the integrated voltage integrates up to the reference voltage and reaches the threshold level, and a reset circuit for feeding each synchronizing pulse back to the integrator to effect reset thereof to zero in order to start a new integration cycle, a constant volt-time integral thereby being obtained between successive synchronizing pulses as determined by the value of the reference voltage;

and means for utilizing each synchronizing pulse to control the rectifier bridge to reduce the bus current to zero to force commutate the conducting pair of inverter SCRs and to then gate on the next pair of SCRs in the prescribed sequence and supply current to the motor through that next pair of SCRs, thereby effectively synchronizing the gating of the inverter SCRs to the rotor position while at the same time force commutating the SCRs,

a constant ratio of the inverter output voltage relative to the inverter frequency being obtained as a result of the constant volt-time integral.

4,565,958

AC LINE VOLTAGE REGULATOR WITH CONTROLLED ENERGY DISPENSER

Edward Cooper, San Diego, Calif., assignor to Power-Matic, Inc., San Diego, Calif.

Filed Jan. 24, 1984, Ser. No. 573,493

Int. Cl.[4] G05F *1/38*

U.S. Cl. 323—248 **10 Claims**

1. An apparatus for regulating an AC voltage, comprising:

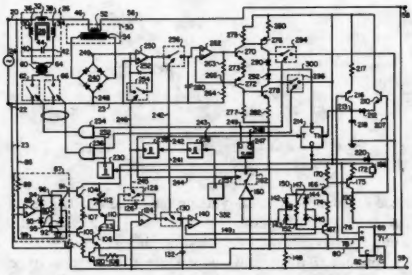
an input port for connecting to a source of input AC voltage;

an output port for delivering a regulated load voltage and a load current to a load;

oscillatory tank circuit means connected between said input

and output ports for being activated to produce an AC adjustment voltage and for combining said AC adjustment voltage with said input AC voltage;

first sensing means responsive to a zero crossing of an input AC voltage connected to said input port for measuring the difference in magnitude and polarity between the level of said input AC voltage and a predetermined voltage level and for providing a first difference signal representative of said magnitude difference and a second difference signal representative of said polarity difference;



variable trigger means responsive to said first difference signal and to said zero crossing for providing an activation signal at a time after said zero crossing determined by said first difference signal; and

switched tank circuit activating means responsive to said second difference signal and to said activation signal for activating said oscillatory tank circuit means to produce an AC adjustment signal having a magnitude determined by the time when said activation signal occurs after said zero crossing and having a phase of oscillation with respect to said input AC voltage determined by said second difference signal.

4,565,959

CURRENT SUPPLY CIRCUIT WITH REDUNDANT BACK-UP CURRENT SOURCE

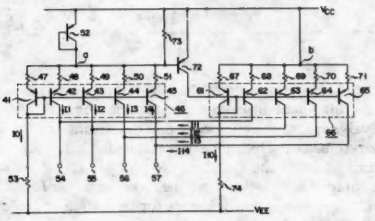
Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1982, Ser. No. 414,909

Claims priority, application Japan, Oct. 30, 1981, 56-173776

Int. Cl.⁴ G05F *3/16*

U.S. Cl. 323—315 **5 Claims**



1. A current supply circuit comprising:

first and second power source terminals;

a plurality of output terminals;

a first current mirror circuit including a first input transistor whose current path is connected between said first and second power source terminals, and a plurality of output transistors whose current paths are connected between said first power source terminal and said plurality of output terminals and whose bases are connected to the base of said first input transistor;

a second current mirror circuit including a second input transistor whose current path is connected between said first and second power source terminals, and a plurality of output transistors whose current paths are connected between said first power source terminal and said plurality of output terminals and whose bases are connected to the base of said second input transistor;

first input current setting means connected to said first input transistor for limiting current flowing through said first input transistor;

second input current setting means connected to said second input transistor for limiting current flowing through said second input transistor;

a plurality of first resistance means connected respectively between said first power source terminal and said plurality of output transistors constituting said first current mirror circuit;

a plurality of second resistance means connected respectively between said second power source terminal and said plurality of output transistors constituting said second current mirror circuit; and

control means for detecting current flowing through said first input transistor, and supplying a first control signal to said second input transistor to set said second input transistor into an inoperative state when it is detected that a current is flowing through said first input transistor, and for supplying a second control signal to said second input transistor to set said second input transistor into an operative state when it is detected that a current is not flowing through said first input transistor, said control means including a control transistor having an emitter connected to said first power source terminal, a collector connected to the base of said second input transistor, and a base connected to said second power source terminal through the current path of said first input transistor.

4,565,960

POWER SUPPLY SWITCHING CIRCUIT

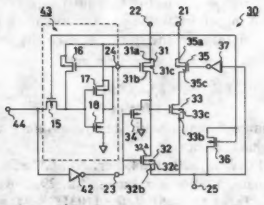
Akira Takata, and Shigeki Matsuoka, both of Toyonaka, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 11, 1984, Ser. No. 629,672

Claims priority, application Japan, Jul. 14, 1983, 58-126919

Int. Cl.⁴ G05F *3/20*

U.S. Cl. 323—317 **12 Claims**



1. A circuit for switching between a pair of power supply voltages, comprising:

a first terminal to which a first voltage is applied;

a second terminal to which a second voltage larger than said first voltage is applied;

a pair of third and fourth terminals for receiving a control signal for controlling the switching between a pair of power supply voltages, said control signal having either a high or low state;

a fifth terminal to which a selected voltage is supplied as an output;

a pair of first and second switching means connected in series between said second terminal and said fifth terminal, said first switching means being turned on or off depending upon the state of said control signal at said third termi-

nal and said second switching means being turned on or off depending upon the state of said control signal at said fourth terminal;

third switching means connected between a junction between said first and second switching means and a reference voltage, said third switching means being turned on or off depending upon the state of said control signal at said third terminal; and

fourth switching means connected between said first terminal and said fifth terminal, said fourth switching means being turned on or off depending upon a low or high state at said junction between said first and second switching means.

4,565,961

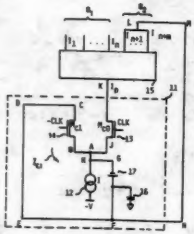
CIRCUIT FOR PRESERVING THE MAGNITUDE OF THE DC COMPONENT IN A PULSED CURRENT SOURCE

Thomas Hornak, Portola Valley, and Gary L. Baldwin, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 18, 1984, Ser. No. 611,802

Int. Cl.⁴ G05F *1/46*

U.S. Cl. 323—312 **4 Claims**



1. An improved pulsed current source of the type in which a current I is supplied by a dc current source to the input of a switch which alternately switches the current I between a first output and a second output of the switch to produce at the first output a pulsed current I_p, said switch having a duty cycle equal to the fraction of time that current I is directed by the switch to the first output and said improvement comprising:

first loop means for adding the dc component of the current at the second output to the current I supplied to the input of the switch, whereby the dc component of I_p is independent of variations in the duty cycle of the switch.

4,565,962

GYRATOR

Katsumi Nagano, Shimonoseki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jul. 20, 1984, Ser. No. 632,858

Claims priority, application Japan, Jul. 29, 1983, 58-138816

Int. Cl.⁴ G05F *1/00;* **H03H** *7/44*

U.S. Cl. 323—351 **7 Claims**

1. A gyrator comprising:

a first terminal to be coupled with first voltage;

a second terminal to be coupled with second voltage;

load means connected to said second terminal;

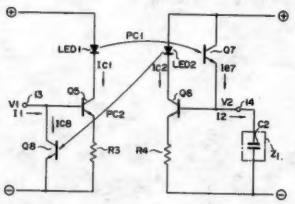
first voltage-current converting means for converting said first voltage applied to said first terminal into electric current;

first electro-photo converting means for converting the output current of said first voltage-current converting means into a corresponding photosignal;

first photo-electric converting means optically connected to said first electro-photo converter, for converting the photosignal, which is produced from said first electro-photo converting means, into a corresponding current, said means supplying the converted current to said load means connected to said second terminal;

second voltage-current converting means for converting voltage, which is caused at said second terminal by said load means, into a corresponding electric current;

second electro-photo converting means for converting the output current of said second voltage-current converting means into a corresponding photosignal;



second photo-electric converting means optically connected to said second electro-photo converting means, said second photo-electric converting means converting the photosignal from said second electro-photo converting means into a corresponding electric current; and

means for supplying the converted electric current from said second photo-electric converting means to said first terminal.

4,565,963

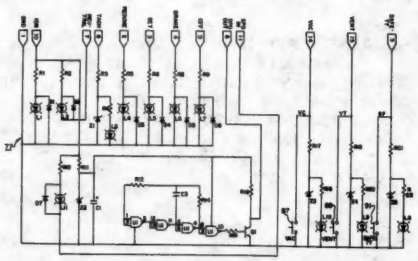
TEST CIRCUIT FOR MOTOR VEHICLE SPEED CONTROL

Mark L. Shaw, Fort Worth, Tex., assignor to Specific Cruise Systems, Inc., Fort Worth, Tex.

Filed Apr. 7, 1983, Ser. No. 482,834

Int. Cl.⁴ G01R *31/02*

U.S. Cl. 324—51 **7 Claims**



1. For use with a motor vehicle speed control system of the type having vacuum servo means for moving a throttle, solenoid valve means for increasing and decreasing the vacuum in the servo means, selector switch means for actuating the system and selecting the speed, an electronic control module for controlling the solenoid valve means in response to the speed selected, and speed sensor means for providing to the control module electrical pulses corresponding to the actual vehicle speed, an improved test means, comprising:

a test circuit adapted to be connected to the control module and having series leads connecting terminals of the solenoid valve means and selector switch means directly with respective terminals of the control module;

indicating means in the test circuit for indicating whether or not voltage potential is present in the series leads; and

oscillator means in the test circuit for applying pulses to the

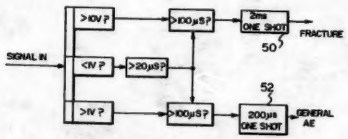
control module that simulate pulses provided by the speed sensor means corresponding to a selected speed.

4,565,964

CABLE INTEGRITY BY ACOUSTIC EMISSION

James R. Matthews, Lower Sackville; George K. Schattschneider; Mervin R. Black, both of Victoria, and James A. Perkins, Sooke, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Oct. 11, 1983, Ser. No. 540,476
Claims priority, application Canada, Oct. 15, 1982, 413580
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—51 8 Claims



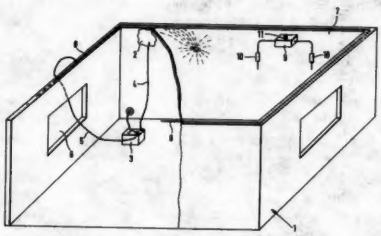
1. A system for monitoring the integrity of a potentially weak section of a towing cable having a plurality of electrical signal transmitting wires and a plurality of wires for carrying a load at one end under a body of water, the system comprising: an acoustic emission transducer secured on the cable at said one end proximate the potentially weak section of cable to receive acoustic emissions from said section coupled through the surrounding water on occurrence of microcracks or breaks in any of the load carrying wires and provide electrical signals representative of said emissions to said signal transmitting wires, and means for processing said signals from the transducer to obtain an indication at the other end of said cable of the number of cracks or breaks in the load carrying wires of said cable, said means for processing said signals from said transducer including means at the other end of said cable for monitoring the magnitude and duration of the electrical signals to discriminate between electrical noise and signals arising as a result of cracks or breaks and between signals arising from cracks and breaks.

4,565,965

METHOD AND APPARATUS FOR LOCATING ROOF LEAKS IN FLAT ROOFS

Heinrich Geesen, Mootzenstrasse 24, 2915 Saterland 1, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 601,798
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314182
Int. Cl.[4] G01R *27/02*
U.S. Cl. 324—65 R 6 Claims



1. A method for locating roof leaks in a flat roof, comprising the steps of:

connecting the positive terminal of a pulse generator to a moisture location below the flat roof;

connecting the negative terminal of the pulse generator to a metal gutter edge of the roof;

detecting pulses fed through the moisture path from the moisture location to the leak location and to the metal gutter by measurement sensors; and

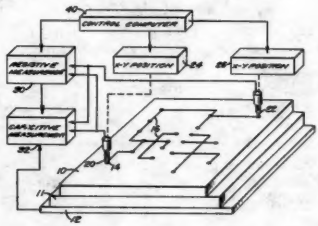
measuring the pulse amplitudes by means of a measurement apparatus connected to said measurement sensors, the pulse amplitudes attenuating in a direction away from the leak location towards the edge of the flat roof.

4,565,966

METHOD AND APPARATUS FOR TESTING OF ELECTRICAL INTERCONNECTION NETWORKS

Robert P. Burr, Matinicus, Me.; Raymond J. Keogh, Huntington, N.Y.; Ronald Morino, Sea Cliff, N.Y.; Jonathan C. Crowell, Brooklyn, N.Y.; James B. Burr, Centerport, N.Y., and James C. Christophersen, West Islip, N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Mar. 7, 1983, Ser. No. 473,590
Int. Cl.[4] G01R *15/12*
U.S. Cl. 324—73 PC 33 Claims



1. A method for testing rigid or flexible electrical interconnection network boards including at least two networks including terminal points and interconnecting conductors, said method comprising the steps of:

establishing an electrically conductive reference means in a predetermined electrical and geometrical position with respect to the surface containing the interconnecting conductors of the networks, and separated therefrom by a dielectric;

making measurements from terminal points of the interconnection board being tested including

at least one impedance measurement from a terminal point of each network to said reference means, and

at least a measurement of the end-to-end resistance of each network;

with either the impedance or the resistance measurement(s) being made first;

comparing said measured impedance and resistance values with the respective pre-established values for an interconnection board with no electrical faults;

and indicating faults when either

(a) said impedance measurement value is above said respective established value by more than a predetermined amount;

(b) said impedance measurement value is below said respective established value by more than a predetermined amount; and/or

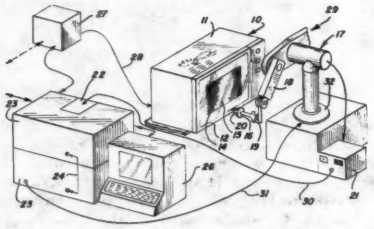
(c) said resistance measurement value departs from said respective predetermined value.

4,565,967

METHOD AND APPARATUS FOR TESTING MICROWAVE OVENS

Gerald A. Eisenbrandt, Lincoln Township, Berrien County, Mich., and James R. Marks, Perrysburg, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 21, 1982, Ser. No. 390,788
Int. Cl.[4] G01R *21/04;* H05B *9/06*
U.S. Cl. 324—95 **36 Claims**



1. Apparatus for determining microwave leakage characteristics of a microwave oven for use in quality control of the manufacture of such ovens, comprising:

a microwave energy sensor;

means for moving the sensor at high speed adjacent the oven to sense microwave leakage therefrom;

first control means for causing the moving means to move the sensor at slower speeds whenever an elevated level of leakage is sensed; and

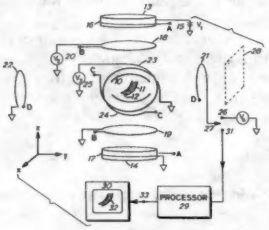
second control means for identifying the location of the sensed levels having a maximum leakage above a preselected amount, said second control means including reference means for comparing the sensed leakage with preselected values for acceptable leakage for said identified location, said reference values being adjusted by a factor correlated with the speed of the sensor.

4,565,968

BLOOD VESSEL PROJECTION IMAGING SYSTEM USING NUCLEAR MAGNETIC RESONANCE

Albert Macovski, 2505 Alpine Road, Menlo Park, Calif. 94025

Filed Feb. 16, 1983, Ser. No. 466,969
Int. Cl.[4] G01R *33/08*
U.S. Cl. 324—309 **25 Claims**



1. In a method for producing a two-dimensional projection image of moving material in a volume using nuclear magnetic resonance the steps of:

insensitizing the magnetic spins in a region of the volume using saturation excitation;

exciting the spins in the region with a burst so that only moving material that has traveled into the region and not experienced complete saturation will produce an output signal; and

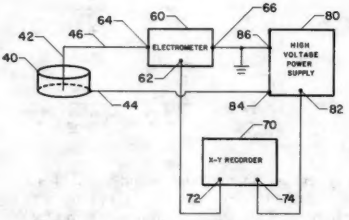
processing the output signals to produce a two-dimensional projection image of the volume.

4,565,969

SATURATION CURRENT INCIPIENT SOOT DETECTOR

Douglas B. Olson, Lawrenceville, and Hartwell F. Calcote, Princeton, both of N.J., assignors to AeroChem Research Laboratories, Inc., Princton, N.J.

Filed Apr. 29, 1983, Ser. No. 489,714
Int. Cl.[4] G01N *27/62*
U.S. Cl. 324—468 **21 Claims**



1. A detection apparatus for determining the onset of sooting conditions in a flame having a flame front, said detection apparatus comprising:

probe means for insertion down-stream of said flame front, said probe means including a negative electrode and a positive electrode;

a voltage supply means connected to said electrodes for applying a variable voltage across said electrodes; and,

detecting means for detecting the change from a substantially chemi-ionization saturation current condition to a substantially thermal ionization non-saturation current condition across said electrodes,

wherein said detecting means is sufficiently sensitive to detect the substantial change in the current voltage relationship which identifies the transition from a substantially chemi-ionization saturation current condition to a substantially thermal ionization non-saturation current condition at the onset of soot formation.

4,565,970

PRECISION HARMONIC REJECTING DEMODULATOR WITH DIGITAL PHASE ALIGNMENT

Billie F. Rider, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 20, 1982, Ser. No. 435,516
Int. Cl.[4] H03D *3/18*
U.S. Cl. 329—50 **9 Claims**

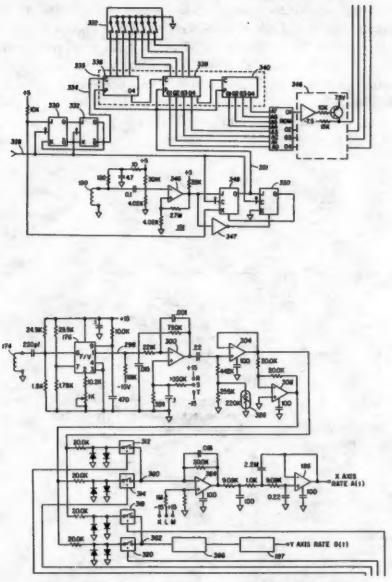
1. In apparatus of the type generating a periodic signal having a peak amplitude representing a physical quantity measured by said apparatus, said periodic signal including a fundamental component and a plurality of harmonic components, a demodulator, comprising:

means for dividing a period of said periodic signal into a plurality of segments;

means for regenerating selected ones of said plurality of segments of said periodic signal in accordance with a predetermined pattern; and

means receiving said ones of said plurality of selected segments of said periodic signal for generating a voltage related to said measured physical quantity, wherein said

predetermined pattern selects segments of said periodic signal which maximize gain of said fundamental compo-



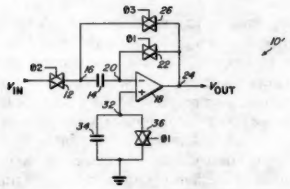
nent and minimize gain of said plurality of harmonic components of said periodic signal.

4,565,971

PARASITIC INSENSITIVE AUTO-ZEROED OPERATIONAL AMPLIFIER

Daniel A. Brookshire, Manor, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 28, 1985, Ser. No. 695,644
Int. Cl.[4] H03F *1/02, 1/14*
U.S. Cl. 330—9 **8 Claims**



1. In combination with a differential input operational amplifier citcuit having an operational amplifier with a negative input having parasitic capacitance associated therewith which induces an error voltage at an output of the operational amplifier, and a positive input adpated to be coupled to a reference voltage, a parasitic compensation circuit for compensating for the parasitic error voltage induced by said parasitic capacitance, comprising:

first switching means for selectively auto-zeroing the operational amplifier;

first capacitance means having a first electrode coupled to the negative input of the operational amplifier and a second electrode, for selectively storing an input voltage and a first parasitic error voltage;

second switching means for selectively coupling the second electrode of the first capacitance means to the output of the operational amplifier;

third switching means coupled between the positive input of the operational amplifier and a reference voltage terminal, for selectively coupling the operational amplifier to the reference voltage terminal; and

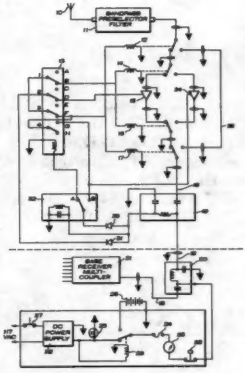
second capacitance means having a capacitance proportional to the first capacitance means and coupled between the positive input of the operational amplifier and the reference voltage terminal, for selectively storing and coupling a second perasitic voltage substantially equal to the first parasitic voltage to the positive input of the operational amplifier.

4,565,972

TOWER MOUNTED PREAMPLIFIER

Daniel P. Kaegebein, Depew, N.Y., assignor to TX RX Systems, Inc., Angola, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,304
Int. Cl.[4] H03F *3/68*
U.S. Cl. 330—124 D **18 Claims**



1. An amplifier system, comprising:

an input transmission line;

an output transmission line;

a primary amplifier circuit;

a backup amplifier circuit;

an amplifier system power supply;

amplifier switching means for mutually exclusively connecting said primary amplifying circuit or said backup amplifying circuit between said input transmission line and said output transmission line;

routing switching means for controlling said amplifier switching means; and

latching switch means responsive to interruptions in an output from said amplifier system power supply for setting said routing switching means in a first or second mode.

4,565,973

CURRENT AMPLIFYING CIRCUIT

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

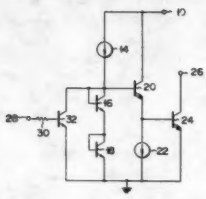
Filed Nov. 9, 1981, Ser. No. 319,413
Claims priority, application Japan, Nov. 12, 1980, 55-159267
Int. Cl.[4] H03F *3/04*
U.S. Cl. 330—288 **6 Claims**

1. A current amplifying circuit comprising:

diode means to which an input current is applied to a high potential terminal thereof;

a first transistor whose base is connected to the high potential terminal of said diode means;

current source means connected to said first transistor for causing a current lineraly proportional to the input current to flow through said first transistor;



a second transistor whose base is connected to an emitter of said first transistor and whose emitter is connected to a low potential terminal of said diode means; and

the current output terminal connected to a collector of said second transistor.

4,565,974

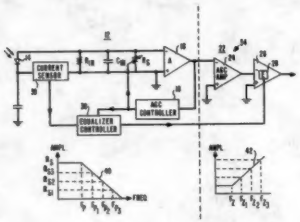
OPTICAL RECEIVER CIRCUIT WITH ACTIVE EQUALIZER

Lanny S. Smoot, Essex, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1984, Ser. No. 640,259

Int. Cl.[4] H03F *3/191;* H03G *3/10*

U.S. Cl. 330—304 **8 Claims**



1. A signal receivieng apparatus of the type having:

an input section including:

a transimpedance amplifier with first and second input nodes and an output node;

a signal current source connected between the input nodes;

a variable shunt impedance connected between the input nodes;

means for controlling the resistance value of the shunt impedance in response to the output of the apparatus, and

a shaping section including an equalizer having a frequency response characteristic which compensates for the frequency response characteristic of the input section when no significant current is flowing in the variable shunt impedance, WHEREIN THE IMPROVEMENT COMPRISES:

means responsive to input signal current for controlling the frequency response characteristic of the equalizer when significant current is flowing in the shunt impedance to maintain the frequency response characteristic of the shaping section so that it continues to compensate for the frequency response characteristic of the input section even when the latter is changed as a result of changes in the value of the shunt impedance.

4,565,975

SYNCHRONIZATION OF PULL-IN OSCILLATORS IN THE TRANSMISSION OF DIGITAL SIGNALS

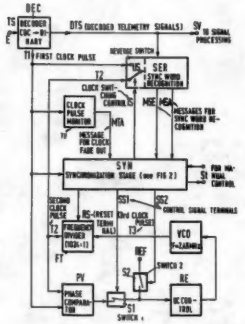
Peter Gegner, Munich, and Friedemann Vollnhals, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,917

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1983, 3309270

Int. Cl.[4] H03L *7/14;* H04L *7/08*

U.S. Cl. 331—1 A **2 Claims**

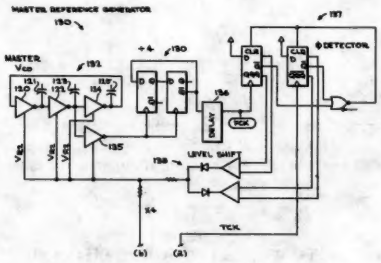


1. A method for the synchronization of clock generators in the transmission of digital signals which contain clock information and periodically at least one synchronization word, where, from the digital signals, a first clock pulse signal phaselocked relative to these transmitted digital signals is generated, and therefrom, by means of a phase control loop containing a phase comparator and a voltage-controlled oscillator connected therewith, a second clock signal is generated by the fact that first, in the phase control loop, a third clock signal of a frequency corresponding to a multiple of the clock frequency of the transmitted digital signals is generated, and from the third clock signal by frequency division the second clock signal is formed, that, upon a disturbance which leads to a failure of the first clock signal, the operation of the phase control loop between the phase comparator and the voltage-controlled oscillator is interrupted, and that, after elimination of the disturbance, the phase control loop between phase comparator and voltage-controlled oscillator is again closed, characterized by the generation of the second clock signal by means of a resettable frequency divider, that, in normal operation, a means for monitoring the synchronization word of the transmitted digital signals is controlled by the second clock signal, that, in the case of a disturbance of the first clock signal or of the synchronization word, the control of the means for monitoring the synchronization word, in addition to the actuation of the phase control loop, is switched to the first clock signal, and that after elimination of the disturbance, in addition to the closing of the phase control loop with the first recognition of the synchronization word when the first clock signal is present, the delivery of clock pulses of the second clock signal is triggered by a resetting of the frequency divider, and the means for monitoring the synchronization word is again connected to and controlled by the second clock signal.

4,565,976
INTERRUPTABLE VOLTAGE-CONTROLLED OSCILLATOR AND PHASE-LOCKED LOOP USING SAME

David L. Campbell, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 5, 1983, Ser. No. 520,876
Int. Cl.[4] H03B 1/00
U.S. Cl. 331—57 22 Claims



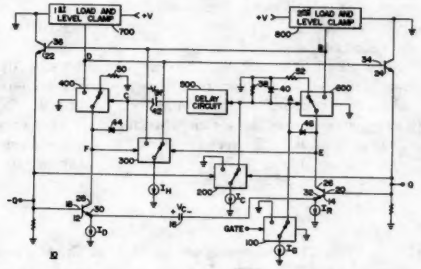
1. A voltage-controlled oscillator (VCO) circuit, comprising:

one or more emitter-coupled-logic (ECL) inverter stages connected as a ring oscillator, each ECL inverter stage having a respective first input terminal and a respective output terminal, each ECL inverter stage having a timing capacitor coupled between its output terminal and a first supply voltage, each ECL inverter stage having a first current source coupled between its output terminal and a second supply voltage, each first current source having a control terminal for varying its output current such that its output current controls the fall time of an output signal on the output terminal of the respective ECL inverter stage and such that the frequency of the ring oscillator is variable in response to a control signal applied to the control terminal of each first current source.

4,565,977
EMITTER COUPLED PROGRAMMABLE OSCILLATOR

William H. Davenport, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 18, 1984, Ser. No. 683,079
Int. Cl.[4] H03K 3/281
U.S. Cl. 331—113 R 10 Claims



1. A multistable circuit comprising:

a pair of active elements,

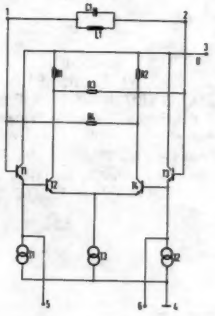
first means for coupling said active elements in feedback relation to cause said active elements to alternately switch on and off in oscillatory fashion, and including frequency determining means in circuit between said active elements effective for determining the frequency of oscillation, and

switching means for disabling the feedback normally provided by said first means and returning said active elements to points of reference potential in order to preset a non-oscillatory state of conduction by said active elements wherein said frequency determining means is held at a voltage level corresponding to the voltage level associated therewith when said active elements are about to switch during oscillation whereby resumption of oscillation can subsequently take place at a predetermined point in the oscillation cycle.

4,565,978
INTEGRABLE OSCILLATOR CIRCUIT

Josef Fenk, Eching, and Richard Stepp, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 30, 1984, Ser. No. 646,005
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333402
Int. Cl.[4] H03B 5/12; H03C 3/24
U.S. Cl. 331—117 R 15 Claims

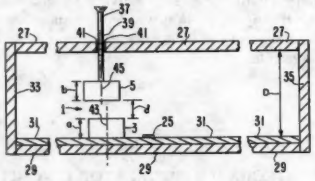


1. Integrable bipolar oscillator circuit, comprising first, second, third and fourth transistors of the same conductivity type, first, second, third and fourth resistors, first, second and third constant current sources having base points and outputs, a reference potential terminal connected to said base points of said first, second and third constant current sources, a supply potential terminal, and a frequency-determining feedback member, said output of said first constant current source being connected to the emitter of said first transistor and to the base of said second transistor, said output of said second constant current source being connected to the emitter of said third transistor and to the base of said fourth transistor, the emitters of said second and fourth transistors being connected to said output of said third constant current source through a given connection, the collectors of said first and third transistors being directly connected to said supply potential terminal, said first and second resistors each being connected between a respective one of the collectors of said second and fourth transistors and said supply potential terminal, said fourth resistor being connected between the base of said first transistor and the collector of said fourth transistor, said third resistor being connected between the base of said third transistor and the collector of said second transistor, said frequency-determining feedback member being connected between the base of said third transistor and the base of said first transistor, and an oscillator voltage being supplied between the emitters of said first and third transistors.

4,565,979
DOUBLE DIELECTRIC RESONATOR STABILIZED OSCILLATOR

Slawomir J. Fiedziuszko, Palo Alto, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 10, 1984, Ser. No. 679,852
Int. Cl.[4] H03B 7/00
U.S. Cl. 331—117 D 14 Claims



1. A double dielectric resonator stabilized oscillator comprising:

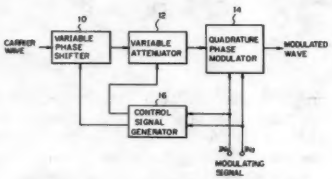
oscillating means having an output conductor carrying an RF sinusoid at substantially one frequency; and

in close proximity to the oscillating means and magnetically coupled thereto, a double dielectric resonator comprising upper and lower dielectric elements magnetically coupled to each other and separated from each other by a nonzero distance d.

4,565,980
PSK MODULATOR WITH PRESET AMPLITUDE AND PHASE CORRECTIONS FOR EACH PHASE

Hideo Ashida, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 26, 1983, Ser. No. 545,460
Claims priority, application Japan, Oct. 29, 1982, 57-190398
Int. Cl.[4] H03C 3/00, 3/04, 3/18; H04B 1/04
U.S. Cl. 332—16 R 19 Claims



1. A phase modulation method for modulating the phase of a carrier wave in accordance with a binary modulating signal to produce a modulated wave, comprising the step of independently correcting at least one of the amplitude and the phase of one of the carrier wave or the modulated wave by respective, predetermined amplitude and phase increments in accordance with the respective values of the binary modulating signal.

4,565,981
ELECTROMAGNETIC DELAY LINE

Kazuo Kameya, Tsurugashima, Japan, assignor to Elmec Corporation, Tsurugashima, Japan

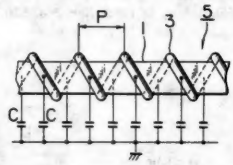
Filed Sep. 21, 1984, Ser. No. 652,735
Claims priority, application Japan, Oct. 5, 1983, 58-186205
Int. Cl.[4] H03H 7/32
U.S. Cl. 333—138 3 Claims

1. A lumped constant electromagnetic delay line comprising:

a nonmagnetic coil form,

an inductance element formed by spirally winding a conductor about said form thereby forming a single layer solenoid-like element, each 360 degree turn of said conductor about said coil form being comprised of a number of inductance sections, said number being greater than one, and

a plurality of capacitors connecting said conductor to a

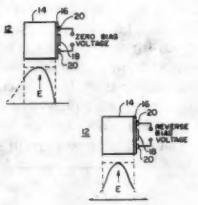


ground terminal to form a ladder-network-like configuration, the number of capacitors connected to said turn of said conductor being equal to the number of inductance sections in said turn.

4,565,982
MILLIMETER-WAVE ELECTRONIC PHASE SHIFTER USING SCHOTTKY BARRIER CONTROL

Richard A. Stern, Allenwood, and Elio A. Mariani, Hamilton Square, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 20, 1983, Ser. No. 505,668
Int. Cl.[4] H01P 1/18
U.S. Cl. 333—157 10 Claims



1. A millimeter-wave phase shifter comprising:

a dielectric waveguide of rectangular cross-section and an energy wave with an associated E-field distribution propagating longitudinally to said cross-section in said waveguide;

a first semi-conducting epitaxial layer formed on a first side surface of said dielectric waveguide;

ohmic contact means for applying a first bias voltage to said first epitaxial layer; and

first Schottky barrier electrode means, formed on said first epitaxial layer, for varying the conductance of said epitaxial layer when the first bias voltage is applied thereby causing a portion of the E-field distribution of the energy wave to be partially displaced from said waveguide resulting in a change in phase of the propagating energy wave.

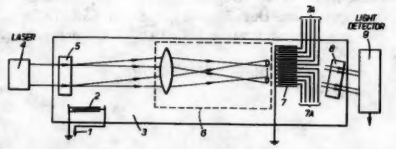
4,565,983
FILTER

Stephen C. Gratze, Boreham, England, assignor to The Marconi Company Limited, Stanmore, England

Filed May 11, 1983, Ser. No. 493,561
Claims priority, application United Kingdom, May 12, 1982, 8213759
Int. Cl.[4] H03H 9/64; G02B 5/172
U.S. Cl. 333—193 5 Claims

1. A frequency selective filter for filtering an input signal,

comprising: means for receiving such input signal; a device for deflecting a light beam by an amount dependent on the frequency of the input signal; a spatial light modulator having a light receiving region disposed to receive light from said device, said light receiving region extending in the direction in which light is deflected by said device; and means for applying control signals to the said spatial light modulator, for giving



said modulator a light transmissivity which varies in the direction in which light is deflected by said device as a function of the value of said control signals, said spatial light modulator being arranged to receive the deflected light and to distinguish between light deflected through different angles by said device so that said modulator transmits light modulated in response to components of said input signal having a particular frequency characteristic defined by the said control signals.

4,565,984

FILTER DEVICE UTILIZING MAGNETOSTATIC WAVES

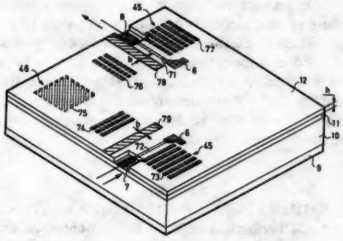
Jean-Paul Castera, Orsay, and Jean-Marie Dupont, Les Ulis, both of France, assignors to Thomson-CSF, Paris, France

Filed May 25, 1984, Ser. No. 614,156

Claims priority, application France, May 27, 1983, 83 08828

Int. Cl.⁴ H03H *9/24, 9/48;* H01P *1/203*

U.S. Cl. 333—202 **10 Claims**



1. A filter device for magnetostatic waves of predetermined wavelength, these magnetostatic waves being propagated in a magnetic layer epitaxied on a non-magnetic layer, comprising:

at least one filter microstrip positioned along the path of the said waves, the width of the said microstrip being equal to a multiple of the wavelength which is to be selectively transmitted; and

dissipating means associated with the said microstrip for dissipating the energy originating from the interaction of the magnetostatic waves with the said filter microstrip.

4,565,985

FILM COPYING APPARATUS

John M. Reel, 1361 Colo Rio Vista, Bullhead City, Ariz. 86430

Filed Jul. 6, 1984, Ser. No. 628,505

Int. Cl.⁴ G03B *27/04*

U.S. Cl. 355—113 **11 Claims**

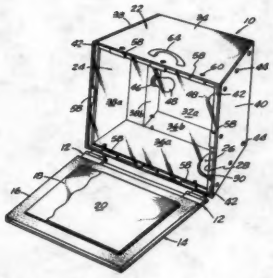
1. Film copying apparatus, comprising:

a housing structure having walls defining a light chamber extending above a bottom light emitting opening;

a light transmitting window member spanning said opening;

a flat base member coextensive with and positioned below said window member and having an upper surface covering of a soft compressible material;

hinge means connecting said housing structure to said base member for hinged swinging movement to an open position to enable the placement of a light sensitive film and a superposed film negative on the upper surface covering of said base member, and to a closed position with the win-



dow member in overlying engagement with the film negative; and

in which said hinge means in said closed position are operable to enable raising and lowering movements between the housing structure and said base member, whereby the weight of the housing will be uniformly applied by said window member and operatively hold the film negative and light sensitive film in contact engagement.

4,565,986

ELECTROMAGNETIC CONTACTOR

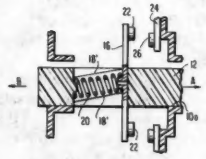
Shigeharu Otsuka; Yuji Mizuno, both of Aichi; Tomoharu Hasegawa, and Masahisa Kobukuro, both of Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,292

Claims priority, application Japan, Sep. 19, 1983, 58-172497

Int. Cl.⁴ H01H *50/02*

U.S. Cl. 335—131 **6 Claims**



1. An electromagnetic contactor, comprising:

(a) a contactor body having a base (10);

(b) a crossbar (12) slidably mounted on said base and having a plurality of elongate apertures (14) therein defining guide surfaces;

(c) a plurality of movable contact members (16) individually slidably supported in said apertures on said guide surfaces, having movable contacts (22) mounted thereon, and being biased towards an end of said apertures; and

(d) a plurality of fixed contacts (26) disposed in confronting relation to said movable contacts, respectively;

(e) said movable and fixed contacts jointly constituting normally open and normally closed contact pairs so that electrical circuits controlled by the contactor can be opened and closed in response to the sliding movement of said crossbar; and

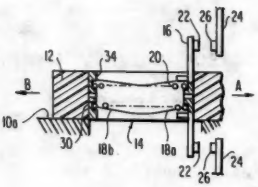
(f) said guide surfaces (18', 18") being linear and continuously inclined relative to the direction of movement of said crossbar throughout the lengths of the apertures to ensure that a movable contact member of a closed contact pair is always supported on inclined guide surfaces, to thereby haltingly wedge said crossbar against said base during the sliding movement of the crossbar with a closed contact pair fused together.

4,565,987

ELECTROMAGNETIC CONTACTOR

Shigeharu Otsuka, and Yuji Mizuno, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,302
Claims priority, application Japan, Sep. 27, 1983, 58-178493
Int. Cl.[4] H01H *50/02*
U.S. Cl. 335—131 6 Claims



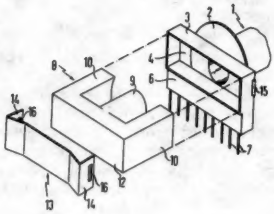
1. An electromagnetic contactor, comprising:
(a) a contactor body having a base (10);
(b) a crossbar (12) slidably mounted on said base and having a plurality of elongate apertures (14) therein defining guide surfaces;
(c) a plurality of movable contact members (16) individually slidably supported in said apertures on said guide surfaces, having movable contacts (22) mounted thereon, and being biased towards an end of said apertures;
(d) a plurality of fixed contacts (26) disposed in confronting relation to said movable contacts, respectively;
(e) said movable and fixed contacts jointly constituting normally open and normally closed contact pairs so that electrical circuits controlled by the contactor can be opened and closed in response to the sliding movement of said crossbar; and
(f) said guide surfaces (18*a*, 18*b*; 18*c*, 18*d*) in each aperture being linear and continuously inclined at two different angles relative to the direction of movement of said crossbar throughout the lengths of the apertures to ensure that a movable contact member of a closed contact pair is always supported on inclined guide surfaces, to thus accommodate, respectively, a movable contact member for either normally open or normally closed contact pairs, and to thereby haltingly wedge said crossbar against said base during the sliding movement of the crossbar with a closed contact pair fused together.

4,565,988

ELECTRIC COIL WITH SECURED CORES

Marc Moura, Pavillons sous Bois, France; Johannes H. Tobben, Breugel, Netherlands, and Ernst Schmotz, Willing, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany; Thomson-CSF, Paris; L.C.C.-C.I.C.E., Bagnolet, both of, France and U.S. Philips Corp., Tarrytown, N.Y.

Continuation of Ser. No. 534,588, Sep. 22, 1983, abandoned. This application Dec. 28, 1984, Ser. No. 685,978
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235655
Int. Cl.[4] H01F *27/26*
U.S. Cl. 336—192 2 Claims



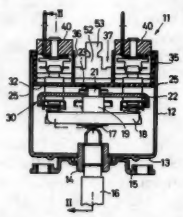
1. Electric coil comprising a winding on a coil form, said coil form having a longitudinal axis and coil form flanges located at respective ends thereof, each of said coil form flanges carrying a plurality of soldering lugs extending parallel to one another and perpendicularly to the longitudinal axis of said coil form, respective magnetizable cores disposed on said coil form at said respective ends thereof, and springs having a substantially planar middle portion and formed with end portions bent out of the plane of said middle portion, said springs respectively engaging said magnetizable cores at said respective ends of the coil form, said coil form flange and said bent end portions of said springs, respectively, being formed with respective laterally extending projections and recesses snappable over said projections so as to urge said cores towards one another in longitudinal direction of said coil form.

4,565,989

TEMPERATURE CONTROL APPARATUS

Bruno Lotter, Oberderdingen; Willi Essig, Böblingen, and Hans Mayer, Kuernbach, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Nov. 2, 1983, Ser. No. 547,787
Int. Cl.[4] H01H *37/36*
U.S. Cl. 337—311 13 Claims



1. A modular temperature control apparatus, comprising:
a casing defining a plurality of modular holding means for snap switches;
at least one preassembled modular snap switch mountable in

any one of the modular holding means formed in the casing, each modular snap switch comprising a separate insulating base and coacting switch parts mounted on the base, the switch parts defining at least one pole of the temperature control apparatus; and,

a common snap switch operating means disposed in the casing, the operating means comprising an expansion element and a transmission mechanism for acting on each modular snap switch mounted in one of the modular holding means, whereby different numbers of the preassembled modular snap switches can be independently mounted one each in the modular holding means to form single and multipole control apparatus in the same casing.

4,565,990

ROTARY OPERATION TYPE MINIATURIZED ELECTRONIC COMPONENT

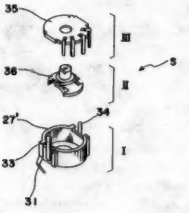
Hiroshi Matsui, Hirakata; Tadashi Mihara, and Koji Umino, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

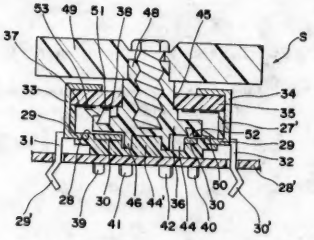
Filed Apr. 3, 1984, Ser. No. 596,821

Claims priority, application Japan, Apr. 7, 1983, 58-52446[U]; Apr. 7, 1983, 58-52447[U]

Int. Cl.⁴ H01C *10/32*

U.S. Cl. 338—171 **9 Claims**





1. A rotary operation type minaturized eletronic component comprising:

a boxlike casing made of insulating synthetic resin, which has an opening formed at an upper face thereof and a metal plate insert molded at a bottom face thereof such that said metal plate functions as fixed contact;

said metal plate being formed with first and second extended portions projecting out of said casing,

said first extended portion being bent so as to project out of said casing to define a connecting terminal, said second extended portion being bent so as to secure said cover plate to said casing, thereby defining a retaining leg;

a movable contact member in sliding contact with said fixed contact;

a cover plate covering said opening of said casing and having a through-hole formed therein and;

an operating means for rotating said movable contact member in said casing, said operating means projecting out of said casing through said through-hole of said cover plate.

4,565,991

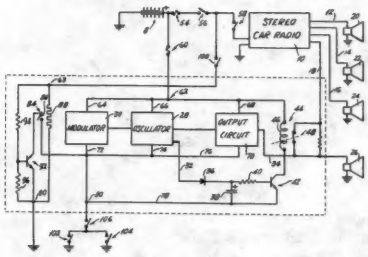
CHIME GENERATOR CIRCUIT FOR CONNECTION WITH EXISTING AUTOMOBILE RADIO SPEAKER

Peter J. Lupoli, Hamden, and Brooke N. Westover, Stratford, both of Conn., assignors to Casco Products Corporation, Bridgeport, Conn.

Filed Jun. 30, 1983, Ser. No. 509,246

Int. Cl.⁴ B60Q *1/00*

U.S. Cl. 340—52 R **18 Claims**



1. A monitoring system for an automobile or other vehicle, comprising in combination:

(a) an automobile radio having an on-off switch enabling it to be energized from the vehicle electrical supply, and having an audio output line,

(b) a speaker electrically connected to be driven by said audio output line,

(c) an audio signal generator electrically connected to and powered by the electrical system of the vehicle, and having an output lead adapted to drive the speaker, and

(d) control means electrically connected with said audio signal generator and responsive to changes in a condition in the automobile or vehicle that is being monitored, for selectively providing an audio signal from said signal generator to said speaker so as to indicate to the car's driver the existence of said condition,

(e) an impedance permanently connected to and in series with the audio output line of the radio and the speaker, and

(f) a switch bridging the impedance, said switch being open when the audio signal is provided to the speaker and being closed when no audio signal is provided, whereby a load is permanently presented to the radio output.

4,565,992

ANALOG TO DIGITAL CONVERTER

Shigemi Sakamoto, Kawasaki, and Satoru Saito, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 18, 1982, Ser. No. 442,589

Claims priority, application Japan, Dec. 2, 1981, 56-193802; Dec. 2, 1981, 56-193803

Int. Cl.⁴ H03K *13/02*

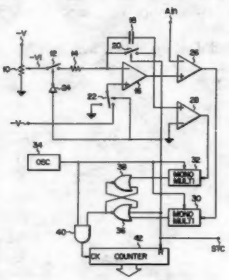
U.S. Cl. 340—347 AD **6 Claims**

1. An analog to digital converter comprising:

signal generating means operable as a voltage follower during a first period of analog-digital conversion for resetting the output signal of the signal generating means to a first predetermined reference level during said first period, said first reference level being input into said signal generating means in said first period, and operable as an integrator during a second period of time after said first period for generating an output signal monotonically varying from

said first reference level at a predetermined rate during said second period;

comparing means for comparing the output signal of said signal generating means with a second predetermined reference level and an analog input level during said second period, the magnitude of said second reference level



being between said first reference level and said analog input level; and

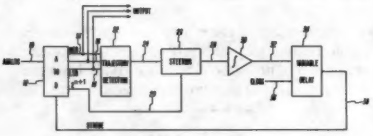
counting means counting clock pulses over a time interval in which the output signal level of said signal generating means is between said second reference level and said analog input level, said time interval being determined by the output signal of said comparing means.

4,565,993

DYNAMIC STROBE TIMING CIRCUITRY FOR A/D CONVERSION APPARATUS

Michael Brian, Garland, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1984, Ser. No. 623,738
Int. Cl.[4] H03M *1/12*
U.S. Cl. 340—347 AD **5 Claims**



1. The method of dynamically delaying a clock signal to optimize the strobe point in the process of digitizing an analog signal comprising the steps of:

A/D converting a multilevel analog signal which analog signal is level representative of a digital value to produce an N+1 bit digital word output signal;

comparing the N most significant bits of the present and previous word values for ascertaining the slope of the analog signal;

exclusive ORing the most significant bit, of the present digital word, not used in the comparison, with a given logic value when the present digital word value is greater than the previous digital word value;

integrating the result of the exclusive ORing step; and

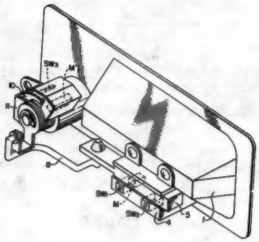
variably delaying a clock signal in accordance with the results of the integrating to generate a strobe signal for initiating each A/D conversion.

4,565,994

DETECTING DEVICE FOR DETECTING THE REMOVAL OF A CYLINDER LOCK

Haruo Mochida, Kiyokawa; Isamu Uemura, Yokosuka; Tokutaro Kurita, and Toshikazu Kobayashi, both of Kawasaki, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Kokusan Kinzoku Kogyo Co., Ltd., Tokyo, both of, Japan

Filed Aug. 1, 1983, Ser. No. 519,367
Claims priority, application Japan, Nov. 16, 1982, 57-19912
Int. Cl.[4] E05B *45/06*
U.S. Cl. 340—542 **7 Claims**



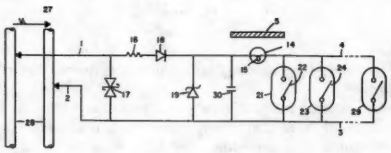
1. A detecting device for detecting the removal of a cylinder lock comprising a magnetic sensor switch and a magnet provided adjacent to each other on a base member and a magnetic shield plate having one end thereof connected to said cylinder lock and the other end thereof being adapted to be inserted into the clearance between said magnetic sensor switch and said magnet, wherein the removal of said cylinder lock causes said one end of said magnetic shield plate to be disconnected from said cylinder lock and said other end of said magnetic shield plate to be removed from said clearance between said magnetic sensor switch and said magnet, said magnetic sensor switch thereby turned on so that said removal of said cylinder lock is detected.

4,565,995

ANTI-ENERGY DIVERSION SYSTEM FOR ELECTRIC UTILITY METERS

John H. Stokes; John I. Clark, both of Las Cruces, and Charles E. Maxwell, Albuquerque, all of N. Mex., assignors to Energy Optics, Inc., Las Cruces, N. Mex.

Filed Aug. 22, 1983, Ser. No. 524,897
Int. Cl.[4] G08B *13/14*
U.S. Cl. 340—571 **9 Claims**



1. An anti-energy diversion system for use with an electric utility meter connected to an AC power line for discouraging energy theft by providing a positive indication of meter tampering, comprising in combination:

non-battery energy storage means for extracting and storing electrical energy from the AC power line of the meter for providing an initial charging delay and backup operation in power outages;

light discharging means effective to convert the stored energy to light and heat when meter tampering is detected;

heat sensitive indicator means responsive to said heat in a

manner effective to generate a highly contrasting change in appearance when exposed to said heat;

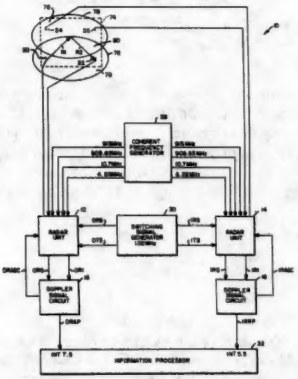
multiple switch means electrically connected to said storage means and connectable to said discharging means, and effective to close the circuit path between said storage and discharging means when any one of several energy diversion events are sensed, thereby delivering said stored energy to said light discharging means.

4,565,996

RANGE LIMITED COHERENT FREQUENCY DOPPLER SURVEILLANCE SYSTEM

Leo R. Close, Sepulveda, Calif., assignor to Mrs. Lawrence Israel, Van Nuys, Calif.

Filed Feb. 6, 1984, Ser. No. 577,348
Int. Cl.[4] G08B *13/14*
U.S. Cl. 340—572 **16 Claims**



14. A merchandise surveillance system comprising:

a coherent frequency doppler radar system disposed to generate a doppler signal indicative of motion of a transducer within a detection zone limited in extent by a maximum transmitter-to-transducer-to-receiver radar signal propagation time; and

a processing system coupled to receive the doppler signal and indicate the presence of a transducer within the detection zone in response to an indication by the doppler signal of motion of the transducer within the detection zone in a given direction and through a selected minimum distance.

4,565,997

WARNING DEVICE FOR A VEHICLE

Yasutoshi Seko, Yokohama, and Takayuki Yanagishima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

PCT No. PCT/JP81/00224, § 371 Date May 6, 1982, § 102(e) Date May 6, 1982, PCT Pub. No. WO82/00802, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 8, 1981, Ser. No. 377,267
Claims priority, application Japan, Sep. 8, 1980, 55-124165
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 340—576 **30 Claims**

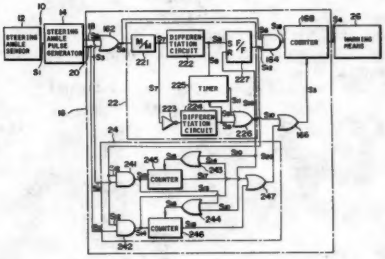
2. A warning device for a vehicle comprising:

a steering angle detecting means for producing pulse signals whenever variation of the steering angular position from a predetermined standard position exceeds a predetermined angle;

a dozing detecting means including

a warning signal generating means for counting pulses of said pulse signals and producing a warning signal when the counted value reaches a threshold value within a predetermined time period, and

a control means for counting pulses of said pulse signals representing the steering angle variation in only one direction to produce a reset signal for clearing the



counted value of said warning signal generating means when the value counted by said control section reaches a predetermined value; and

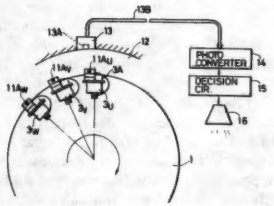
a warning means for producing a warning in response to the warning signal.

4,565,998

DIODE FAILURE DETECTING DEVICE IN ROTARY RECTIFIER

Nobuhiko Tsuji; Keijiro Nakamura, and Masanori Iike, all of Kanagawa, Japan, assignors to Fuji Electric Company Limited, Kanagawa, Japan

Filed Feb. 15, 1983, Ser. No. 466,753
Claims priority, application Japan, Feb. 15, 1982, 57-21319
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—645 **15 Claims**



1. A diode failure detecting system in a rotary rectifier device having a rotor and a stator comprising:

a plurality of fuses on said rotor connected in series to a plurality of rectifying diodes;

fusing flag means arranged along the peripheral surface of said rotor and associated with each fuse to indicate whether or not said fuse has blown out;

optical means on said stator to continuously monitor said fusing flag means to indicate whether said fuse has blown out and produce an optical output, said optical means comprising an optical fiber sensor having a light applying section for irradiating said fusing flag of each fuse and, a light receiving section for receiving light reflected from said fusing flag;

photo-electric converter means converting a reflected light beam from said receiving section into an electrical signal to generate a regular pulse train signal when said fuses are not blown out and to generate a regular pulse train signal lacking a periodic pulse or pulses when said fuse or fuses are blown out; and

decision circuit means counting the number of pulses for

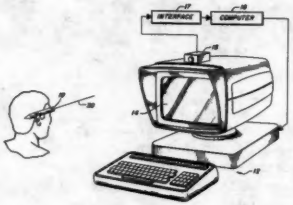
each revolution of said rotor from said pulse train signal from said photo-electric converter for determining the flow of over-current in a diode when said count is smaller than a preset value.

4,565,999

LIGHT PENCIL

Allen King, Needham; Peter Collins, Danvers, and Jay Goldman, Wellesley, all of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Apr. 1, 1983, Ser. No. 466,074
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—706 19 Claims



1. A cursor positioning system for a data terminal having a display, comprising:

A. a first radiation source and an associated first radiation sensor, wherein the radiation characteristics of one of said first source and first sensor has a substantially omnidirectional pattern over a predetermined angular segment, the radiation characteristic of the other of said first source and first sensor corresponds to the superposition of a plurality of directional patterns extending substantially from a single point, said plurality of patterns being substantially uniformly distributed over partially overlapping predetermined angular segments, said first sensor including means for generating a sensor signal associated with each of said directional patterns, said sensor signals being related to the radiational coupling between said first source and first sensor,

B. means for fixing the position of one of said first source and first sensor with respect to said display and for fixing the position of the other of said first source and first sensor with respect to the head of an operator of said system,

C. motion processing means responsive to said sensor signals and including means for extracting operator motion signals from said sensor signals and for generating position signals therefrom representative of the orientation of the operator's head, said extracting means including means for suppressing portions of said sensor signal representative of predetermined operator head motions, and

D. means for generating cursor signals adapted for controlling the position of a cursor on said display in response to said position signals.

4,566,000

IMAGE DISPLAY APPARATUS AND METHOD HAVING VIRTUAL CURSOR

Craig E. Goldman, Natick, and Douglas A. Voorhies, Framingham, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1983, Ser. No. 466,077
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—709 5 Claims

1. Electrical image processing apparatus comprising

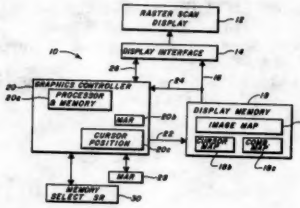
A. memory means for storing concurrently

(1) first signals representative of an image field,

(2) second signals representative of a cursor pattern for display at an addressable cursor position on a display of the stored image field, and

(3) third signals representative of a selected combinatoral function of said stored cursor pattern and of a segment of said stored image field at said addressable cursor position,

B. image display means coupled for receiving signals stored in said memory means and arranged for producing a visual image in response to signals applied to it, and



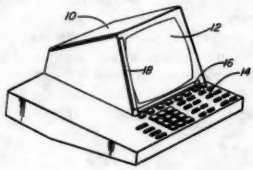
C. control means coupled with said memory means and responsive to a cursor display command for applying to said display means either of said stored first signals or said stored third signals to produce said visual image and to include therein a selective display of said cursor pattern combined with said image field at an addressed cursor position.

4,566,001

TOUCH STRIP INPUT FOR DISPLAY TERMINAL

Timothy G. Moore, Ottawa; David G. Dockendorff, Kanata, and Stephen J. Harris, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 8, 1983, Ser. No. 464,959
Int. Cl.[4] G09G *1/00, 3/00*
U.S. Cl. 340—711 18 Claims



1. A terminal comprising a rectangular display screen, display means for displaying an image on the screen, a position sensitive touch strip spaced from the screen, mounted along one side thereof and extending the length of the screen, voltage generating means for generating a voltage level in response to the touch strip being touched, the voltage level corresponding to the position at which the strip is touched, a selector for selecting one of a plurality of possible display modes, an input interface unit having inputs from said voltage generating means and from said selector, a microprocessing unit having an input from the input interface unit and an output to an output interface unit, the output interface unit having an output controlling said display means, the microprocessing unit having stored therein a control program which determines the display mode in response to an input from the selector and determines image detail in response to an input from the voltage generating means.

4,566,002

DATA OUTPUT APPARATUS CAPABLE OF ROTATING DATA OUTPUT THEREFROM RELATIVE TO DATA INPUT THERETO

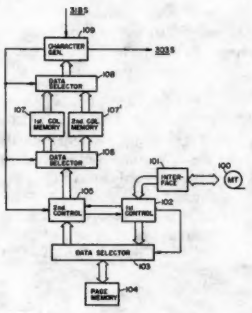
Genmei Miura, Tokyo; Akira Konno, Sayama, and Motofumi Konishi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 134,221, Mar. 26, 1980, abandoned. This application Dec. 16, 1982, Ser. No. 450,352

Claims priority, application Japan, Mar. 30, 1979, 54-39076; May 8, 1979, 54-56539; May 8, 1979, 54-56540

Int. Cl.⁴ G09G *3/20*

U.S. Cl. 340—727 **43 Claims**



1. Data output apparatus, comprising:

first memory means for storing image data in coded form in row by row format;

control means for rearranging said coded image data in row by row format as coded image data in column by column format;

second memory means for storing said coded image data rearranged by said control means in said column by column format; and

output means for putting out said coded image data in said column by column format from said second memory means; and

pattern generating means responsive to said coded image data in said column by column format put out by said output means from said second memory means, for generating a dot pattern represented by said coded image data in said column by column format.

4,566,003

DISPLAY ELEMENT AND DISPLAY PANEL USING THE SAME

Masayuki Wakatake, No. 405, 9-5 Tamagawa 1-chome, Setagaya-ku, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,096

Claims priority, application Japan, Dec. 7, 1981, 56-196646

Int. Cl.⁴ G09G *3/16*

U.S. Cl. 340—764 **2 Claims**

2. A display panel comprising:

a movable display surface structure;

a display switching unit; and

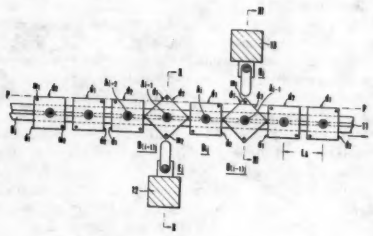
a drive unit;

wherein, letting M lines of arrangement spaced a predetermined distance apart in a first direction and arranged to extend in a second direction perpendicular to the first direction to be represented by $b_1, b_2, \ldots b_M$ respectively, the display surface structure has N display elements D_{1j} to D_{Nj} sequentially disposed on the line of arrangement b_j ($j=1, 2, \ldots M$) at predetermined intervals in the second direction, said first and second directions defining a plane of arrangement having a front side and a back side;

wherein the display element D_{ij} ($i=1, 2, \ldots N$) is formed by a four-sided right prismatic block member having an axis and a top and a bottom and having four outer peripheral surfaces formed to define first, second, third and fourth edges in parallel to and around said axis of the block member, said block member being rotatable about said axis, said block member having a shaft receiving hole therethrough along said axis; said block member further consisting of first and second magnetic pieces disposed to extend along said first and third edges, respectively, first and second display surfaces defined by the outer peripheral surfaces between said first and second edges and said first and fourth edges, respectively, and first and second grooves formed in the bottom of said block member, each of said grooves intersecting said axis, said first and second grooves parallel to said said first and second display surfaces, respectively;

wherein said display surface structure includes N shafts A_i extending in said first direction and spaced apart in said second direction, each of said display elements D_{ij} slidingly receiving a corresponding shaft A_i in said shaft receiving hole to be rotatable thereabout and slidable in the axial direction relative to said shaft A_i;

wherein said display surface structure further includes M support rods B_j extending in said second direction and spaced apart in said first direction, each said rod having a flange which is receivably engageable with said first or second groove in the bottom of said block member;



wherein the display switching unit has, mounted on opposite sides of said plane of arrangement of the display elements D_{ij}, an erasing magnetic head E_j and a writing head G_j common to the display elements D_{1j} to D_{Nj} disposed on the line of arrangement b_j, said erasing magnetic head E_j and said writing magnetic head G_j being spaced apart from one another in the second direction;

wherein the drive unit is provided with means for moving said display elements D_{ij} and the erasing magnetic heads E_j and the writing magnetic heads G_j relative to each other in the second direction, and means for energizing the writing magnetic heads G_j in synchronism with the relative movement between said writing magnetic heads G_j and said display elements D_{ij};

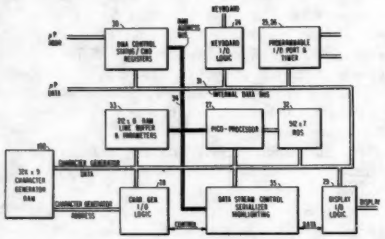
said erasing head E_j, when said second display surface lies in a predetermined plane, turning said display element D_{ij} in synchronism with the relative movement of the display element D_{ij} and the erasing head E_j to locate said first display surface in said predetermined plane; and

said writing head G_j, when energized, turning the display element D_{ij} 90° to switch the state in which said first display surface lies in said predetermined plane to the state in which the second display surface lies in said predetermined plane.

4,566,004
DATA MANAGEMENT FOR PLASMA DISPLAY

Geoffrey A. Emerson, Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,783
Int. Cl.⁴ G09G *3/28*
U.S. Cl. 340—771 **10 Claims**



1. A display management system for at least one plasma gas panel display, said at least one plasma gas panel display having a complex interface requiring the computation of the boundaries of write and erase operations based on commands from an application program and the geometry of said at least one plasma gas panel, said display management system comprising:

host processor means for supplying application program operations,

system microprocessor means connected to said host processor means for receiving and storing application program operations downloaded from said host processor means, said system microprocessor means further carrying out decoding and execution of commands in said application program operations downloaded from said host processor means including management of display data, and

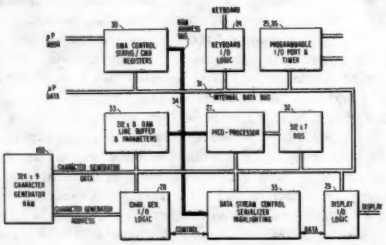
at least one plasma display adapter means for providing high level control of said interface to said gas panel display, for serialization of character data, and for computing aaid boundaries of said gas panel write and erase operations,

wherein said at least one plasma display adapter means includes picoprocessor means for computing said boundaries of said plasma gas panel write and erase operations.

4,566,005
DATA MANAGEMENT FOR PLASMA DISPLAY

Norman Apperley, Chandlers Ford, United Kingdom; Roger J. Edwards, Woodstock, N.Y.; Raymond L. J. Foster, Landford, United Kingdom; David C. Haigh, Winchester, United Kingdom; Michael Haslam, Winchester, United Kingdom, and Peter Verey, Winchester, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,776
Int. Cl.⁴ G09G *3/28*
U.S. Cl. 340—771 **9 Claims**



1. A display management system for at least one plasma gas panel display, said at least one plasma gas panel display having a complex interface requiring the computation of the boundaries of write and erase operations based on commands from an application program and the geometry of said at least one plasma gas panel, said display management system comprising:

host processor means for supplying application program operations,

system microprocessor means connected to said host processor means for receiving and storing application program operations downloaded from said host processor means, said system microprocessor means further carrying out decoding and execution of commands in said application program operations downloaded from said host processor means including management of display data, and

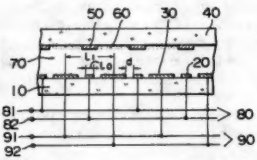
at least one plasma display adapter means for providing high level control of said interface to said gas panel display, for serialization of character data, and for computing the boundaries of said gas panel write and erase operations.

4,566,006
GAS DISCHARGE DISPLAY APPARATUS

Yukio Okamoto, Sagamihara; Shinichi Shinada, Kokubunji, both of Japan, and Tadao Okabe, deceased, late of Hachioji, Japan (by Kumiko Okabe, administratrix), assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 17, 1983, Ser. No. 495,496
Claims priority, application Japan, May 17, 1982, 57-81431
Int. Cl.⁴ G09G *3/22, 3/20, 3/00*
U.S. Cl. 340—771 **22 Claims**

PRIOR ART



1. A gas discharge display apparatus, comprising:

a discharge display panel including a plurality of electrodes formed on a substrate with a predetermined distance therebetween, and connecting means for interconnecting said plurality of electrodes so as to enable polyphase pulse voltages to be applied thereto; and voltage applying means for applying sequentially bipolar polyphase pulse voltages to said electrodes through said connecting means so that each of said electrodes operates alternately as an anode and a cathode on a time division basis in response to said bipolar pulse voltages and discharge produced between electrodes operating as the anode and the cathode is caused to perform self-scanning.

4,566,007
REARRANGEABLE MULTICONNECTION SWITCHING NETWORKS

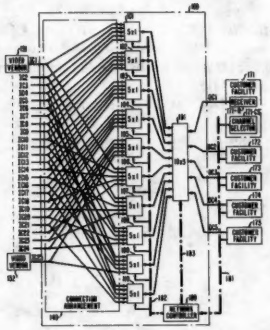
Gaylord W. Richards, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 16, 1983, Ser. No. 494,901
Int. Cl.⁴ H04Q *3/62*; H04M *3/00*
U.S. Cl. 340—825.8 **22 Claims**

1. A switching network for selectively connecting N_1 input channels to n_2 output channels, N_1 and n_2 being positive integers, n_2 being at most equal to N_1, said switching network comprising

a plurality of first stage switches each having a plurality of inlets and at least one outlet and each comprising means for selectively connecting any one of the inlets of that first stage switch to the at least one outlet of that first stage switch, the number of said plurality of first stage switches being at least equal to n_2,

a second stage switch having n_2 outlets each connected to a different one of said output channels and having a plurality of inlets each associated with a different one of said plurality of first stage switches and each being connected to the at least one outlet of the associated first stage switch, said second stage switch comprising means for selectively connecting said outlets of said second stage switch to said inlets of said second stage switch and

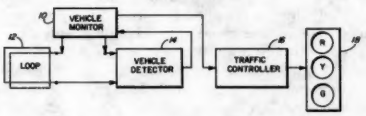


connection means for connecting each of said inlets of said plurality of first stage switches to an associated predetermined one of said input channels such that for any group of n_2 of said input channels, there is a group of n_2 of said first stage switches each having one inlet connected to a different one of that group of n_2 of said input channels, and where no two inlets of a single first stage switch are connected to the same input channel.

4,566,008
FAULT DETECTING CIRCUIT AND METHOD FOR A VEHICLE DETECTOR SYSTEM

Avery W. Powers, Scottsdale; Guy L. Cates, Mesa; Charles W. Staats, Jr., and Jarrell W. Mullies, both of Tempe, all of Ariz., assignors to Solid State Devices, Inc., Tempe, Ariz.

Filed Jun. 29, 1982, Ser. No. 393,452
Int. Cl.⁴ G08G 1/01
U.S. Cl. 340—941 **40 Claims**



1. A vehicle detector monitor coupling a vehicle detector output to a traffic controller input comprising:

means for receiving a call in signal from said vehicle detector output when a vehicle is detected;

means coupled to said receiving means for generating a call out signal in response to said call in signal;

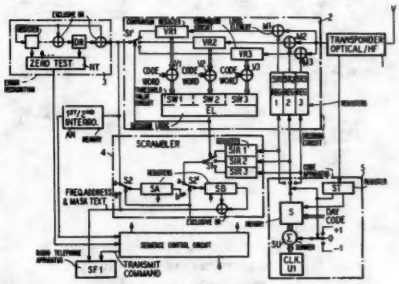
means coupled to said receiving and generating means for comparing said call in and call out signals, said comparing means developing a first control signal when said call in and call out signals correspond, and a second control signal when said call in and call out signals do not correspond; and

means for coupling said generating means to said traffic controller input in response to said first control signal, and means for disconnecting said generating means from said traffic controller input in response to said second control signal.

4,566,009
IDENTIFICATION, FRIEND OR FOE IFF INSTALLATION

Manfred Hanni, Puchheim, and Kurt Hechfellner, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 207,996
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941820
Int. Cl.⁴ G01S 9/56, 13/74
U.S. Cl. 343—6.5 LC **16 Claims**



1. An identification friend or foe arrangement utilizing a radio telephone installation, operable on a frequency hopping basis, for coded communication between interrogating and interrogated stations with coded interrogations and replies, comprising:

a transmitting station including an IFF-transmitter and a radio telephone receiver comprising a frequency synthesizer;

identification generator means connected to said IFF-transmitter including an encoder for providing thereto an interrogation including a fixed code word known to the interrogated station and a variable data portion including a frequency address and reply masking data, said receiver connected to adjust to the transmit frequency of the expected reply;

said frequency synthesizer connected to said receiver and controlled by the frequency address;

identification means connected to said identification generator means and to said receiver for identifying a reply of low redundancy and producing a friend signal, and including retry means operable after a predetermined interval during which a friend reply is not received to cause a second interrogation and a second reply with great redundancy at respective different frequencies and with respective different mask text;

a transponder, including an IFF-receiver, in the interrogated station and operable in response to an interrogation to transmit a reply, including radio telephone apparatus operable to transmit to said radio telephone receiver of said transmitting station a mask text on a frequency derived from the variable data portion of the interrogation signal in response to a transmit command.

4,566,010
PROCESSING ARRANGEMENT FOR PULSE COMPRESSION RADAR

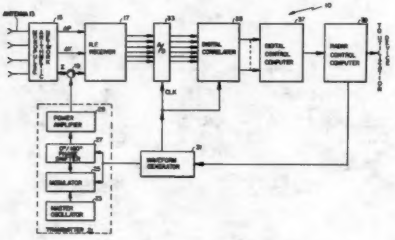
John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 28, 1982, Ser. No. 372,517
Int. Cl.⁴ G01S 13/26
U.S. Cl. 343—17.2 PC **2 Claims**

1. In a phase-coded pulse compression radar transmitting an N-bit sequence of pulses to provide an aperiodic coded signal,

an arrangement for processing echo signals to suppress selected range sidelobes, such arrangement comprising:

(a) a waveform generator, actuable during each interval between coded transmitted signals, for forming a first set of N+M digital numbers, such set consituting a reference code representative of the complete N-bit sequence of pulses followed by the first M bits of such sequence, where M is an integer, less than N, corresponding with the number of sidelobes to be cancelled;



(b) analog-to-digital converter means, responsive to the echo signal and signals in the range sidelobes, for forming a second set of digital numbers representing the echo signal and signals in all range sidelobes; and

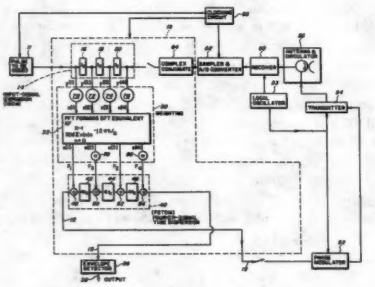
(c) digital correlator means, responsive digit by digit, to the first and the second set of digital numbers to produce a third set of digital numbers representative of the echo signal and the signals in all range sidelobes, less the signals in the selected range sidelobes.

4,566,011

PALINDROMIC POLYPHASE CODE EXPANDER-COMPRESSOR

Bernard L. Lewis, Fort Washington, and Frank F. Kretschmer, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 8, 1983, Ser. No. 512,045
Int. Cl.[4] G01S *13/28*
U.S. Cl. 343—17.2 PC **18 Claims**



1. A digital pulse expander-compressor comprising:

input-signal expansion means responsive to an applied pulse for successively generating N replicas y(n) of the pulse, where n=1, 2, 3, . . . N, and N is an integer;

matched filter weighting means connected to said input-signal expansion means and having N output terminals, said weighting means operating to weight the replicas y(n) with predetermined weights to effect a discrete Fourier Transform processing of the replicas; and

time dispersion means connected to said weighting means for appropriately delaying each of said N weighted pulses to effect an expansion or a compression;

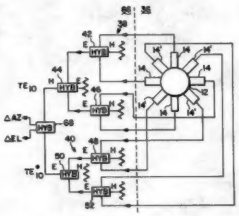
wherein said predetermined weights are chosen so that in the expansion mode a polyphase code equivalent to the sample values obtained by sampling at the Nyquist rate a coherently detected linear-frequency-modulated waveform one-half of a Nyquist sample period after the leading edge of the waveform is formed.

4,566,012

WIDE-BAND MICROWAVE SIGNAL COUPLER

Younho Choung, and Kenneth R. Goudey, both of Sunnyvale, Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 30, 1982, Ser. No. 454,896
Int. Cl.[4] H01P *5/18;* H04B *7/10*
U.S. Cl. 343—359 **6 Claims**



1. An apparatus for extracting tracking signals from a received microwave signal for directing an antenna, said apparatus operative to pass dominant mode information-containing microwave signals with minimum attenuation through a signal path of a first waveguide while extracting from said signal path selected favored nondominant mode microwave signals for use in developing error signals to control directional orientation of said antenna, said apparatus comprising a first waveguide, a second waveguide, a third waveguide, a fourth waveguide, a fifth waveguide, a sixth waveguide, a seventh waveguide, an eigth waveguide and a ninth waveguide, said first waveguide being circular and said second through ninth waveguides being rectangular, said second through ninth waveguides being disposed at angular separations of 45° juxtaposed to said first waveguide and oriented along a central axis of said first waveguide, said first waveguide forming a common wall with one wall of each said second through ninth waveguides, said common wall defining a coupling structure having the following characteristics between said first waveguide and each one of said second through ninth waveguides:

a row of holes whose centers are spaced equidistant along said central axis, each said hole being of a diameter no greater than 0.3 wavelengths of the wavelength of the highest frequency intended to be conveyed through said first waveguide in its characteristic dominant TE_{11} mode, said holes being circular, said holes being of a diameter selected to produce a distribution of coupling strengths of a preselected nondominant mode of said first waveguide for coupling to each of said second through ninth waveguides, and specifically a nondominant TE_{21} circular mode in said circular first waveguide which is manifest as a TE_{10} rectangular mode in each one of said second through ninth waveguides, said distribution of coupling strengths being characterized by a Bessel function distribution of coupling strength along said central axis, said Bessel function distribution of coupling strength being established at a certain coupling strength level at each one of said holes to minimize reverse coupling from said second through ninth waveguides into said first waveguide by the size of said holes, said second through ninth waveguides having output ports being coupled in preselected pairs to extract from said first waveguide two balanced

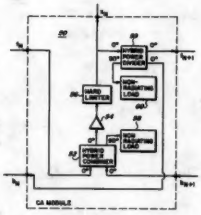
and orthogonal signals representative of energy contained in the TE_{21} nondominant circular signal of said first waveguide for use in developing a tracking signal based on phase and amplitude information contained in the carrier of said TE_{21} mode signal.

4,566,013

COUPLED AMPLIFIER MODULE FEED NETWORKS FOR PHASED ARRAY ANTENNAS

Richard Steinberg, Columbia, Md., and J. Paul Shelton, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,432
Int. Cl.[4] H01Q 3/26
U.S. Cl. 343—372 **24 Claims**



1. A phase divider system for producing a plurality of incrementally phased output signals comprising:

a plurality of phase divider modules serially coupled together to form a network, each module producing a module output signal;

said network being coupled to receive first and second boundary signals, said first and second boundary signals being coupled respectively to first and second ends of said serially coupled modules in said network, said first and second boundary signals each having an associated phase angle, the phase angle of said first boundary signal differing from the phase angle of said second boundary signal by a phase angle difference;

wherein said phase angle difference is divided by said plurality of modules in said network, said output signal of each module having a phase angle differing from the phase angles of the output signals of immediately adjacent modules in said network by a phase gradient;

whereby said phase angle difference is divided into a plurality of incrementally phased module output signals;

wherein said phase gradient is given by:

$$\Delta\phi_o=(\theta_M-\theta_o)/M$$

where:

$\Delta\phi_o$ is said phase gradient,

θ_M is the phase angle of said second boundary signal,

θ_o is the phase angle of said first boundary signal, and

M is the total number of said plurality of modules plus one.

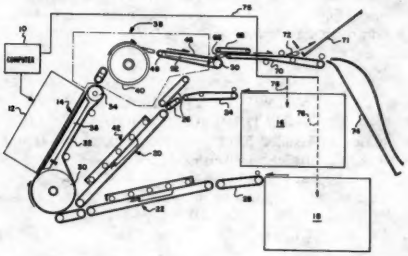
4,566,014

DROP COUNTER PRINTER CONTROL SYSTEM

Suresh C. Paranjpe, Dallas; Burton W. Scott, Plano, both of Tex., and Henry N. Kannapell, Raleigh, N.C., assignors to The Mead Corporation, Dayton, Ohio

Filed May 31, 1984, Ser. No. 615,625
Int. Cl.[4] G01P 15/18; B41J 5/44, 13/08
U.S. Cl. 346—1.1 **9 Claims**

6. In a printing system wherein images represented by image data are formed by directing ink drops onto paper sheets with desired images being formed by depositing only selected ink drops on said paper sheets and comprising printer means for generating and selecting ink drops corresponding to an image to be printed in response to said image data, transport means for conveying sheets of paper at a substantially constant speed in a printing relationship past said printer means, sheet feeder means for feeding paper sheets into said transport means, and dryer means for receiving and drying printed sheets conveyed by said transport means, a method for controlling said sheet feeder means to improve the operation of said printing system comprising the steps of:



determining the print density of each paper sheet fed to said transport means; and

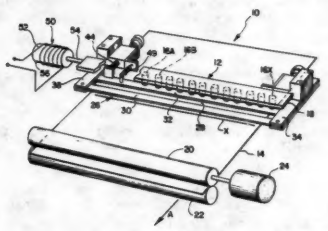
operating said sheet feeder means to define spacing between successive paper sheets on said transport means dependent upon the print density of said sheets.

4,566,015

IMAGE RECORDING APPARATUS WITH ADJUSTABLE MASK

Hugh R. MacKenzie, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 7, 1984, Ser. No. 618,184
Int. Cl.[4] G01D 9/42; G03B 41/00
U.S. Cl. 346—107 R **9 Claims**



1. Image recording apparatus responsive to electrical signal input information representative of a select image for recording that image by exposing a photosensitive material, said image recording apparatus comprising:

a line exposure array including a plurality of linearly spaced apart light emitting image defining elements;

means for holding said line exposure array in light exposing relationship across the photosensitive material and for moving either the photosensitive material or said exposure array in a direction transverse to the longitudinal axis of said exposure array to expose the entire surface of the photosensitive material excepting those portions of the photosensitive material directly opposite the spaces between adjacent light emitting elements, said holding and moving means also operating to simultaneously oscillate said line exposure array in a direction parallel to the longitudinal axis thereof so as to displace each light emitting element by a distance at least equal to the spacing between adjacent light emitting elements to expose the surface of

the photosensitive material directly opposite the spaces between adjacent light emitting elements; and

means for masking the light emitting elements so as to reduce the area of said photosensitive material that would otherwise be exposed, said masking means comprising means for defining an elongated slit in parallel light transmitting relationship with respect to said linearly spaced apart light emitting elements and means for finely adjusting the width of said slit to control the width of the exposed lines across the photosensitive material so as to also control image resolution.

4,566,016

DUAL INTENSITY LASER BEAM PICTURE RECORDING METHOD

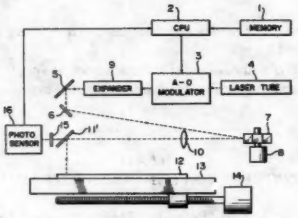
Tatsunosuke Masuda, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Feb. 21, 1984, Ser. No. 582,085

Claims priority, application Japan, Mar. 24, 1983, 58-47890

Int. Cl.[4] G01D *9/00, 9/42*

U.S. Cl. 346—108 **3 Claims**



1. In a method of recording desired images on a photosensitive material including the steps of modulating a light beam generated from a light source by modulating means, deflecting said modulated light beam by deflecting means, separating said deflected light beam by a half mirror whereby one of said separated light beams reflected by said half mirror is scanned on the photosensitive material to record desired images thereon, and the other separated light beam is fed to photosensor means through grating means, said method characterized in that:

a first intensity of the light beam generated by said light source is maintained at a low enough intensity not capable of sensitizing said photosensitive material,

said first intensity light beam is always modulated according to said grating means, and

a second intensity of the light beam for recording, modulated at a high enough intensity for sensitizing said photosensitive material,

whereby said two kinds of light beams modulate in such a manner as described above and are binarily controlled by said modulating means.

4,566,017

METHOD AND TRANSDUCER FOR INCREASING INKING RESOLUTION IN AN INK-MOSAIC RECORDING DEVICE

Kenth Nilsson, Akersberga, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany and Siemens Eleman AB, Solna, Sweden

Filed Oct. 9, 1984, Ser. No. 658,745

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 3341401

Int. Cl.[4] G01D *15/18*

U.S. Cl. 346—140 R **12 Claims**

1. A method for increasing inking resolution in an ink-mosaic recording device having a recording head with a plurality of serially-arranged piezoelectric transducers wherein by means of piezoelectric deformation of the transducers, recording fluid is ejected drop-wise in a direction toward a recording carrier, comprising the steps of:

forming each of the transducers with two spaced strips of piezoelectric material which are contacted on opposite sides for electrically driving the same, and are covered on opposite sides by plates, the plates and strips forming a

longitudinally extending substantially rectangular channel;

providing recording fluid in the channel for ejection from an end thereof; and

applying voltages through the contacts to the two strips such that the two strips at least timewise are deformed differently.

4,566,018

RECORDER OPERATING WITH DROPS OF LIQUID

Kenth Nilsson, Akersberga, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 3, 1984, Ser. No. 606,994

Claims priority, application Fed. Rep. of Germany, May 10, 1983, 3317082

Int. Cl.[4] G01D *15/18;* **B41J** *3/04*

U.S. Cl. 346—140 R **9 Claims**

1. A recorder operating with drops of liquid for recording of analog curves, alphanumerical characters and/or images on a recording medium at a recording medium location, said recorder comprising piezoelectric transducers with deflectable zones actuatable for producing drops of writing fluid, said piezoelectric transducers being reed-shaped and being mounted in at least one plane and having electrical contacts such that the deflectable zones deflect perpendicularly to the plane extending through the transducers in response to electrical potential variations at the contacts, said recorder further comprising plate means disposed parallel to said transducers and confronting said deflectable zones at such a distance that a drop of writing fluid is ejected from a writing fluid receiving space between a respective individual transducer and the plate means and toward the recording medium location during travel of the individual transducer toward the plate means after deflection of such transducer in a direction away from said

plate means, characterized in that the plate means has grooves that extend parallel to the respective transducers and toward

the recording medium location for guiding the drops of writing fluid.

4,566,019

METHOD OF DRIVING ELECTRODES IN AN ELECTROEROSION PRINTER

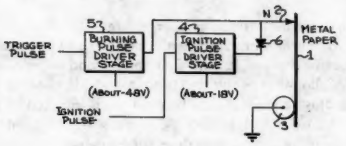
Gottfried Goldrian, Boeblingen, and Volker Rudolph, Aidlingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corp. (IBM), Armonk, N.Y.

Filed Mar. 9, 1984, Ser. No. 586,905

Claims priority, application European Pat. Off., Mar. 15, 1983, 83 102548.1

Int. Cl.[4] G06K *15/10*

U.S. Cl. 346—163 **4 Claims**



4. A circuit for operating a print electrode of an electroerosion printer comprising:

means for supplying a trigger pulse having a predetermined duration,

means for supplying an ignition pulse of shorter duration than the trigger pulse and in a time delayed relationship with respect to each trigger pulse, but during the continuation of each trigger pulse,

an output conductor connected to the print electrode,

first driver stage means operable upon receipt of a trigger pulse for delivering a high voltage, low current pulse to said output,

second driver stage means operable upon receipt of an ignition pulse for delivering a relatively short duration, high current pulse to said output conductor, and

a unidirectionally conductive device connected between said second stage driver and said output conductor, said device being oriented such that conduction therethrough is inhibited in the presence of a voltage on said output conductor during continuance of the low current pulse and the presence of an arc at said printing electrode.

4,566,020

HOT-ELECTRON AND HOT-HOLE TRANSISTORS HAVING SILICIDE CONTACTS

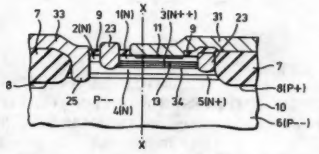
John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,517

Claims priority, application United Kingdom, Apr. 8, 1982, 8210534

Int. Cl.[4] H01L *29/48, 27/02, 23/48, 29/72*

U.S. Cl. 357—15 **18 Claims**



1. A transistor comprising a semiconductor body including a silicon surface region adjacent a surface of the body, a base region which at least partially underlies the surface region, a collector region which at least partially underlies the base region, a barrier-forming means which form an emitter-base barrier between the base region and at least a portion of the surface region and a base-collector barrier between the base region and the collector region, the current flow through the base region from across the emitter-base barrier being by hot charge carriers characteristic of one conductivity type, characterized in that at least one of the base and collector regions is extended to said surface of the body by a metal-silicide region which extends from said surface at least through the thickness of the surface region to contact electrically said one of the base and collector regions, said metal-silicide region forming an isolating Schottky barrier with an adjacent semiconductor portion of the body to isolate electrically said one of the base and collector regions from said adjacent semiconductor portion.

4,566,021

SEMICONDUCTOR DEVICE

Naoki Yokoyama, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 334,923, Dec. 28, 1981, abandoned. This application Apr. 10, 1985, Ser. No. 721,144

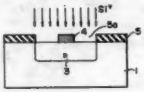
Claims priority, application Japan, Dec. 30, 1980, 55-189544

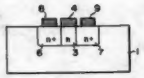
Int. Cl.[4] H01L *25/54, 29/48*

U.S. Cl. 357—15 **14 Claims**

1. A semiconductor device, comprising a Schottky contact of at least one refractory metal silicide formed on a compound

semiconductor substrate, wherein said Schottky contact on said substrate is characterized by a barrier height and an ideal-





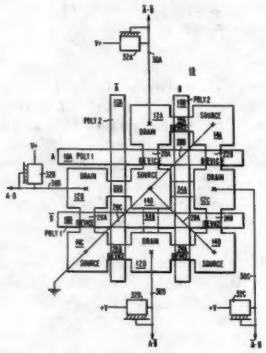
ity factor that are stable with respect to heat treatment at a temperature up to at least 800° C.

4,566,022

FLEXIBLE/COMPRESSED ARRAY MACRO DESIGN

Howard L. Kalter, Colchester, and Donald B. Kiley, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.J.

Filed Jan. 27, 1983, Ser. No. 461,421
Int. Cl.⁴ H01L *27/04, 29/78*
U.S. Cl. 357—23.14 **7 Claims**



1. An integrated circuit logic device comprising

a semiconductor substrate of a first conductivity type having a plurality of second conductivity type regions in a surface thereof;

said second conductivity type regions being bounded at least partially by at least two sets of intersecting conductive gate means which serve as input means to form a plurality of FET devices, at least some of which have one of said second regions as a common first current conducting electrode; and

at least three of the remaining second regions adjacent to said one second region forming the second current conducting electrode of three FET devices;

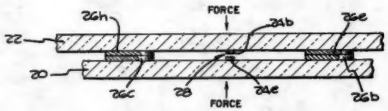
said second regions not being connected to each other.

4,566,023

SQUEEZABLE ELECTRON TUNNELLING JUNCTION

Paul K. Hansma; John M. Moreland, both of Goleta, and Sam Alexander, Santa Barbara, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 12, 1983, Ser. No. 522,870
Int. Cl.⁴ H01L *29/84*
U.S. Cl. 357—26 **8 Claims**



1. A squeezable electron tunnelling junction comprising:

flexible substrate means for providing two opposed supporting surfaces;

electrode means, disposed on said substrate means, for defining a gap between said surfaces; and

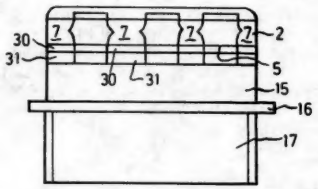
spacer means for maintaining said electrode means in spaced apart relation, whereby an external force can be applied to said substrate means to decrease said gap to a point where tunnelling will occur.

4,566,024

MATRIX INFRARED DETECTOR

Joël J. Fleury, Lille, and Jacques H. P. Maille, Paris, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Aug. 6, 1982, Ser. No. 405,886
Claims priority, application France, Mar. 12, 1982, 82 04259
Int. Cl.⁴ H01L *31/14*
U.S. Cl. 357—32 **8 Claims**



1. Matrix infrared detector comprising:

a first solid semi-conductor wafer of one of two types: p and n, said first wafer having first and second faces;

zones of the other of the two types p and n in the first wafer, extending from said first face which is adapted to be exposed to infrared radiations, thereby defining interfaces and forming a matrix of detector elements;

a second semi-conductor wafer having a third face which faces the second face of the first wafer, said second wafer comprising integrated circuit means for processing the signals delivered by the detector elements of the matrix of the first wafer; and

solder studs connecting said zones of the first wafer to the third face of the second wafer;

said zones of the first wafer extending from the first to the second faces of the first wafer, each zone being in the form of a channel comprising a detection space extending from the first face, and a connection space extending form the second face of the first wafer;

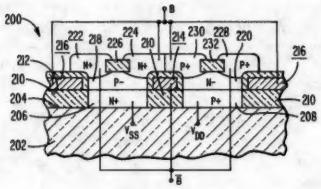
said solder studs extending along the second face of the first wafer facing the second wafer.

4,566,025

CMOS STRUCTURE INCORPORATING VERTICAL IGFETS

Lubomir L. Jastrzebski, Plainsboro, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 10, 1983, Ser. No. 503,044
Claims priority, application United Kingdom, Jun. 24, 1982, 8218286
Int. Cl.[4] H01C *27/02, 29/78, 27/01*
U.S. Cl. 357—42 12 Claims



1. An integrated circuit device incorporating a plurality of interconnected vertical IGFETs on a bulk silicon substrate, comprising:

an insulated gate electrode disposed on a surface of the substrate;

the substrate including a first substrate portion of second conductivity type and a second substrate portion of first conductivity type disposed at said surface, said first and second substrate portions being electrically isolated from each other;

first and second monocrystalline silicon regions extending, respectively, from said first and second substrate portions, said monocrystalline silicon regions each being contiguous with a part of the insulated gate electrode;

the first monocrystalline silicon region having a body region of first conductivity type, and the second monocrystalline silicon region having a body region of second conductivity type, such that a predetermined voltage applied to the insulated gate electrode selectively creates an inversion channel in one of the body regions, said inversion channel having a length which is perpendicular to the substrate surface;

a second insulated gate electrode disposed on the substrate surface, the second insulated gate electrode being contiguous with the body region of the first monocrystalline silicon region and the body region of the second monocrystalline silicon region;

a source/drain region underlying each body region and of opposite conductivity type thereto; and

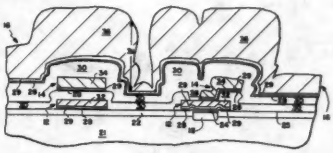
first and second source/drain regions overlying each body region, said first and second overlying source/drain regions being isolated from each other and being of opposite conductivity type to the body region thereunder.

4,566,026

INTEGRATED CIRCUIT BIMETAL LAYER

Ed C. Lee, Bloomington, and Jon A. Roberts, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 25, 1984, Ser. No. 603,862
Int. Cl.[4] H01L *23/48;* B05D *5/12*
U.S. Cl. 357—71 25 Claims



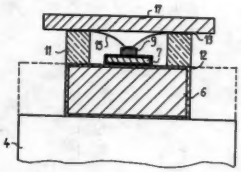
1. A bimetal layer located between a metalization layer and a semiconductor device in an integrated circuit, the bimetal layer comprising a layer of TiWN and a layer of TiN, wherein one of the TiWN and TiN layers is deposited above the other.

4,566,027

PRE-MATCHED MODULE FOR AN ULTRA-HIGH FREQUENCY DIODE WITH HIGH HEAT DISSIPATION

Michel Heitzmann, Combs la Ville, and Marianne Boudot, Clichy, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 21, 1983, Ser. No. 554,099
Claims priority, application France, Nov. 23, 1982, 82 19585
Int. Cl.[4] H01L *23/56, 23/04*
U.S. Cl. 357—81 8 Claims



1. A pre-matched module for an ultra-high frequency diode having a diode chip mounted in a case, said case comprising:

a first metal-coated diamond base;

a second metal-coated diamond base very much smaller than said first base, said second base being fixed to said first base so as to form a central stud, said diode chip being fixed to said second base, said first and second bases acting as a first electrical connection for said diode chip;

a dielectric ring mounted on said first base and surrounding said second base and said diode;

a metal cap mounted on said dielectric ring on the side oposite said first base, so as to form an enclosure around said second base and said diode;

connection means extending from said diode to a joint between said dielectric ring and said metal cap to act as a second electrical connection for said diode chip;

said first and second bases having high heat conductivity to dissipate the heat from said diode chip; and

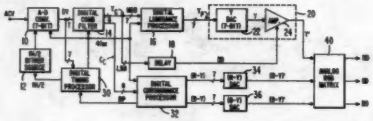
said first and second bases having dimensions and being arranged so as to form a radial impedance transformation base.

4,566,028

DIGITAL SIGNAL PROCESSING APPARATUS FOR PROCESSING DITHERED DIGITAL SIGNALS

Henry G. Lewis, Jr., Hamilton Square, and Thomas V. Bolger, Merchantville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 25, 1983, Ser. No. 498,102
Int. Cl.[4] H04N *11/04*
U.S. Cl. 358—21 R **20 Claims**



1. Digital signal processing apparatus comprising:

a signal source for providing digital input signals having N bits, where N is a positive integer;

processing means, coupled to said signal source, for digitally processing said digital input signals to develop processed digital signals therefrom, wherein said processing means is responsive to less than N of the most significant bits of said digital input signals;

first means, coupled to said processing means and including digital-to-analog converting means, for developing analog output signals representing the magnitude of said processed digital signals; and

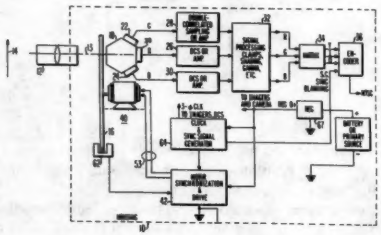
second means, coupled to said first means and to said signal source, for changing the correspondence between the magnitude of said analog output signals and the magnitude of said processed digital signals in response to the least significant bit of said digital input signals.

4,566,029

SHUTTERED CCD CAMERA WITH LOW NOISE

Cydney A. Johnson, Marlton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 23, 1984, Ser. No. 592,839
Int. Cl.[4] H04N *9/09, 9/04, 9/07, 5/225*
U.S. Cl. 358—50 **11 Claims**



1. A television camera comprising:

charge-coupled imaging means coupled to receive light from an image for generating low-level signals therefrom, said imaging means being subject to smear in the presence of an illumination highlight which detracts from the appearance of the televised image;

shutter means coupled in the light path from said image to said imaging means, said shutter means including an opaque portion for cutting off said light from said image, and including a light-passing portion for transmitting said light from said image to said imaging means;

energizing means coupled to said charge-coupled imaging means for energizing said imaging means for allowing integration of signal-representative charges;

synchronizing means coupled to said energizing means for being energized thereby and coupled to said imaging means for recurrently clocking said signal-representative charges to form a recurrent stream of said low-level signals;

amplifying means coupled to said imaging means for receiving said stream of low-level signals for amplifying said signals in a low-noise manner;

shutter motor means electrically coupled to said energizing means for being energized thereby and coupled to said shutter means for causing said shutter means to move to successively interpose said opaque and transparent portions between said image and said imaging means, said shutter motor means being synchronized by said synchronizing means for interposing said opaque portions of said shutter means in said light path during recurrent pull-down intervals and for interposing said light-passing portions of said shutter means in said light path during intervals in which said signal-representative charges are clocked, whereby said motor means coupled to said shutter means is physically near said imaging means, and motor noise is undesirably radiated to said imaging means, which motor noise while small in magnitude is nevertheless significant relative to said low-level signals;

conductive shielding means surrounding a substantial portion of said motor for providing shielding of said motor noise, whereby electrically connecting said shielding means to a point of reference potential for said energizing means unexpectedly perturbs the shielding; and

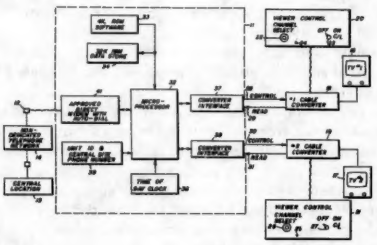
electrical isolating means coupled to said motor and to said conductive shielding means for mechanically supporting said shielding means while providing electrical isolation of said shielding means from said energizing means whereby said shielding means is effective to reduce said motor noise.

4,566,030

TELEVISION VIEWER DATA COLLECTION SYSTEM

Rand B. Nickerson, Scarborough, and Russell J. Welsh, Toronto, both of Canada, assignors to CTBA Associates, Cincinnati, Ohio

Filed Jun. 9, 1983, Ser. No. 502,654
Int. Cl.[4] H04N *7/00*
U.S. Cl. 358—84 **4 Claims**



1. In a system for monitoring habits of cooperating television viewers or panelists, including a central location and a plurality of remote units at a plurality of panelist locations, a remote unit for connection to a television broadcast receiver comprising:

means for receiving a television broadcast signal;

a viewer control means including a channel selector and a channel lock switch actuable between channel lock and unlock positions and coupled to said means for receiving a television broadcast signal, said channel lock switch functioning in said channel lock position to lock the associated television broadcast receiver to the channel currently selected notwithstanding any subsequent changes in the channel selector;

a microprocessor;

first memory means for storing programming information for said microprocessor and second memory means for storing data;

timing means for generating time of day information;

means for coupling said viewer control means through said microprocessor to the television broadcast receiver, said microprocessor functioning to monitor changes in said channel selector and the state of said channel lock switch and to store same, together with time of day information, in said second memory means, changes in said channel selector while said channel lock switch is in the unlock position being stored as channel viewing data and changes in said channel selector while said channel lock switch is in the lock position being stored as one of viewer reaction and viewer identification data;

a modem for connection of the non-dedicated telephone network, said modem being coupled to and under the control of said microprocessor;

register means for setting a unique identification signal for each remote unit, each such unique identification signal corresponding to a preselected unique call-in time for each such remote unit;

said microprocessor functioning to establish communication through said modem with the central location at the preselected unique call-in time and to transmit the data stored in said second memory means to the central location; and

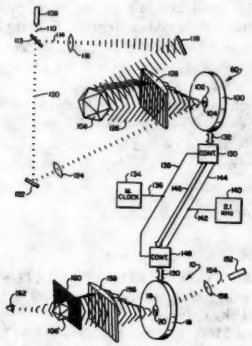
wherein said second memory means includes a channel substitution table and wherein the contents of said channel substitution table are down loaded from the central location to the remote unit during communication at said unique call-in time, said microprocessor controlling channel selection to effect substitute channel selection at preselected times in accordance with said channel substitution table regardless of the manually viewer selected channel.

4,566,031

SPATIAL LIGHT MODULATION WITH APPLICATION TO ELECTRONICALLY GENERATED HOLOGRAPHY

Ronald L. Kirk, Findlay, Ohio, assignor to The Holotronics Corporation, Findlay, Ohio

Filed Feb. 16, 1984, Ser. No. 580,650
Int. Cl.[4] H04N *13/00*
U.S. Cl. 358—90 **33 Claims**



1. A spatial light modulator comprising:

first and second spaced, planar supports;

a first array of parallel, transparent, electrically conductive electrodes supported from said first support in a first predetermined orientation;

a second array of parallel, electrically conductive electrodes supported from said second support in a second predetermined orientation to define with said first array of electrodes a matrix of electrode crossing locations;

a normally opaque medium intermediate said first and second transparent supports, having a suspension of dipolar particles normally randomly dispersed therein, said particles being movable into alignment with an applied electrical field of at least threshold field strength value to effect a transmissive condition of said medium;

field restriction means adjacent each said electrode crossing location and adjacent each said first and second array for dissipating flux components of a said applied electrical field extensible laterally from said crossing locations; and

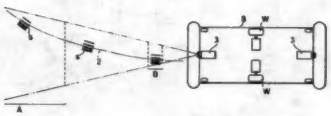
control means electrically coupled with each said first and second electrode arrays for applying select signals to predetermined discrete electrodes thereof to form electrical fields therebetween having predetermined values at and above said threshold value.

4,566,032

VISUALLY GUIDED VEHICLE

Shigeru Hirooka; Shuichi Maeda; Shigehiro Yamamoto, and Toshihiko Yamaguchi, all of Kyoto, Japan, assignors to Nippon Yusoki Co., Ltd. and Dac Engineering Co., Ltd., both of Kyoto, Japan

Filed Nov. 10, 1983, Ser. No. 550,690
Claims priority, application Japan, Dec. 20, 1982, 57-223516
Int. Cl.[4] H06N *7/18*
U.S. Cl. 358—103 **5 Claims**



1. An unmanned load transporting vehicle comprising:

a guide belt laid on a floor on which said vehicle is run, said guide belt comprising a plurality of reflecting segments comprising a plurality of bar codes representing corresponding instructions including a halt instruction, a deceleration instruction and turning instructions;

a video camera installed on an upper portion of the vehicle, said camera being directed to receive light reflected from said guide belt;

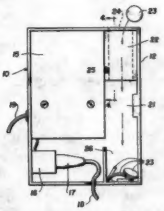
controller means installed on the body of the vehicle receiving an output signal from said camera for controlling running of said vehicle in response to said output signal from said camera.

4,566,033

TELEVISION VIEWING TIME REGULATOR

Linda L. Reidenouer, 205 Rowledge Rd., Charlottesville, Va. 22901

Filed Aug. 11, 1983, Ser. No. 522,020
Int. Cl.[4] H04N *7/16, 1/34*
U.S. Cl. 358—115 **7 Claims**



1. A television viewing time regulator unit including a receptacle adapted to receive a plug of a television receiver power cable and further including another power cable adapted to be

plugged into a conventional household power outlet, a regulated power supply on the regulator unit connected with said another power cable, a timer circuit means on the regulator unit including a magnetically operated activating switch and means to enable the delivery of operating power through the first-named receptacle to the television receiver for a predetermined period of time regulated by the timer circuit means, and the regulator unit having a receiving passage adjacent to the magnetically operated activating switch for a token of magnetic material.

4,566,034

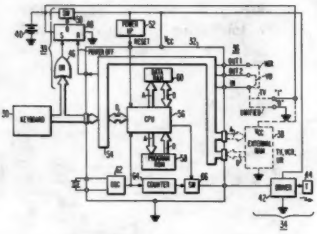
REMOTE CONTROL TRANSMITTER ARRANGEMENT FOR ONE OR MORE TELEVISION DEVICES

Mark A. Harger, Noblesville; Joseph E. Amaral, Carmel, and Harold Blatter, Indianapolis, all of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed May 2, 1983, Ser. No. 490,721

Int. Cl.[4] H04N *1/32*; H04B *9/00*; H04Q *9/00*

U.S. Cl. 358—194.1 **7 Claims**



1. A remote control transmitter comprising:

a microcontroller including an input/output unit by which data is coupled to and from said microcontroller; a program memory in which is stored a program for controlling the operation of said remote control transmitter; a data memory for temporarily storing data processed during the operation of said remote control transmiter; and a central processing unit coupled to said input/output unit, to said program memory, and to said data memory for processing data received from or supplied to said input/output unit and to said data memory under the control of said program;

a keyboard including a plurality of function control keys coupled to said input/output unit by which a user may control respective functions of a remotely located device, said keyboard generating function representative coded signals representing respective functions to be controlled when a function key is activated by a user;

transmitter type code generating means coupled to said input/output unit for providing a transmitter type representative coded signal of either a first type indicating a particular device which said remote control transmitter is to control or of a second type indicating that the remote control transmitter is to control more than one device;

said central processing unit being responsive, under program control, to said transmitter type representative coded signals and to said function representative coded signals provided for generating remote control message representative coded signals representing a remote control message including a preamble portion identifying the particular device to be controlled and a data portion identifying the particular function to be controlled; said central processing unit, under program control, generating said preamble portion in accordance with said transmitter type representative coded signals and generating said data portion in accordance with said function representative code signals if said transmitter type representative coded signal is of said first type, and said central processing unit, under program control, selectively interrogating said input/output unit to generate said preamble portion in accordance with device representative coded signals representing the particular device to be controlled, other than said transmitter type representative signals, and generating said data portion in accordance with said function representative signals and said device representative signals if said transmitter type representative signal is of said second type; and

transmitting means having an input coupled to said input-/output unit for transmitting a remote control signal in accordance with said remote control message representative coded signals.

4,566,035

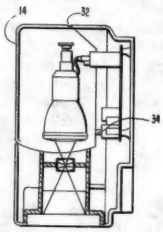
CRT MONITOR WITH BUILT-IN CAMERA

Robert A. Samuel, Snohomish; Gary J. Selke, Seattle, and Russell W. Morris, Redmond, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Mar. 18, 1983, Ser. No. 476,460

Int. Cl.[4] H04N *5/84*

U.S. Cl. 358—244 **6 Claims**



1. An improved CRT monitor of the type comprising a memory unit which stores pixcels of information which are then displayed on the screen of said CRT comprising:

(a) a cabinet for said CRT;

(b) means for moving said CRT from a depressed position within said cabinet to a raised "viewing" position;

(c) an apparatus within said cabinet for holding a light-sensitive medium in a plane parallel to the screen of said CRT, said apparatus being separated from the screen of said CRT;

(d) a lens which projects an image from said CRT onto said light-sensitive medium whereby the image on said CRT will be projected onto said light-sensitive medium; and

(e) means for producing a photograph of said image on said light-sensitive medium.

4,566,036

REMOTE CONTROL APPARATUS

Tsuneaki Kadosawa, Ninomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,547

Claims priority, application Japan, Jun. 7, 1983, 58-100239; Jun. 17, 1983, 58-107851

Int. Cl.[3] H04N *5/26*

U.S. Cl. 358—210 **17 Claims**

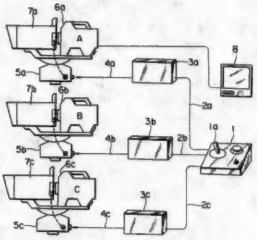
1. A remote control apparatus provided with:

a plurality of cameras;

a plurality of universal heads for supporting said cameras thereon and effecting panning and tilting of said cameras;

signal producing means for producing an electrical signal regarding the position of an object to which said cameras are to be turned;

electrical memory means for storing information for determining the angle of panning and the angle of tilting; and



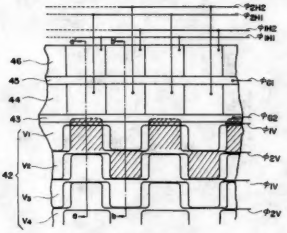
control means for controlling the panning and tilting of said universal heads by said stored information and said electrical signal to turn said cameras to said object.

4,566,037

SOLID-STATE AREA IMAGING APPARATUS

Norihiko Takatsu; Atsushi Kawahara, both of Kawasaki, and Masaki Isogai, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,599
Claims priority, application Japan, Dec. 25, 1982, 56-209105
Int. Cl.[4] H01N *3/14*
U.S. Cl. 358—213 **7 Claims**



1. A solid-state area imaging apparatus for producing a still picture signal, said apparatus being provided on an electronic still camera, comprising:

(a) photosensitive means including a plurality of photoelectric conversion elements for storing electric charges in accordance with the intensity of light impinging thereupon, said plurality of photoelectric conversion elements being so arranged as to form a plurality of parallel lines on a predetermined area in a predetermined direction and being divided into a first group and a second group, such that the photoelectric conversion elements of said first group are arranged apart from one another in a checkered pattern with one or more photoelectric conversion elements of said second group being disposed therebetween;

(b) first transfer means for transferring a first plurality of electric charges in a direction substantially perpendicular to said predetermined direction, said first plurality of electric charges being previously stored in said first group of photoelectric conversion elements; and

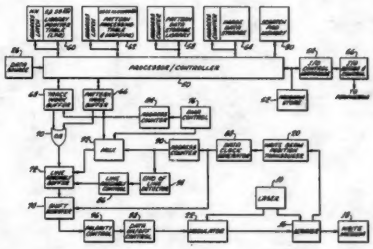
(c) second transfer means for transferring a second plurality of electric charges in said direction substantially perpendicular to said predetermined direction, said second plurality of electric charges being previously stored in said second group of photoelectric conversion elements wherein said first transfer means extend linearly in said predetermined direction and comprise a plurality of electrodes, each of said electrodes having a plurality of projections extending therefrom at regular intervals, said projections extending alternatingly in a first direction substantially perpendicular to said predetermined direction and in a second direction opposite to said first direction.

4,566,038

SCAN LINE GENERATOR

Delbert R. Dimick, Irvine, Calif., assignor to Excellon Industries, Torrance, Calif.

Continuation-in-part of Ser. No. 314,524, Oct. 26, 1981, abandoned. This application Aug. 30, 1982, Ser. No. 413,167
Int. Cl.[4] H04N *7/18, 1/00*
U.S. Cl. 358—256 **35 Claims**



1. A system for generating an image in a plurality of scan lines of image elements, said image comprising a plurality of traces having relatively less change from one scan line to the next, and a plurality of patterns having relatively more change from one scan line to the next, said system comprising

trace buffer means for containing data defining trace elements on a scan line,

pattern buffer means for containing data defining pattern elements on a scan line,

means for providing a group of trace data defining trace elements line by line,

means for providing a group of pattern data defining pattern elements line by line,

means for clearing said pattern buffer means and feeding a line of said pattern data thereto for each line of said data,

means for clearing said trace buffer means and feeding trace data thereto only upon occurrence of a line of trace data that varies from a preceding line,

means for generating a data stream that controls a plurality of scan lines to produce an image,

control means for controlling said data stream, and

means for transferring data from both said trace and pattern buffer means to said control means to control said data stream.

4,566,039

FACSIMILE SYSTEM

Koichi Oya, Kokubunji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1982, Ser. No. 378,734
Claims priority, application Japan, May 20, 1981, 56-74879
Int. Cl.[4] H04N *7/04*
U.S. Cl. 358—280 **31 Claims**

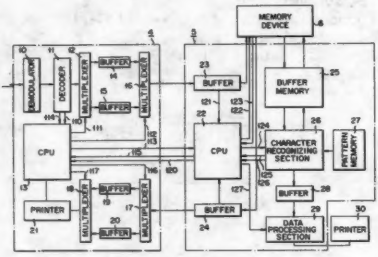
1. A character recognition facsimile system comprising:

receiving means for receiving facsimile signals representing a document pattern, said document pattern including a plurality of input character patterns;

first memory means, responsive to said facsimile signals, for storing said plurality of input patterns in the form of associated input character pattern data;

second memory means for storing a plurality of standard character patterns in the form of standard character pattern data;

recognizing means for comparing said input pattern data stored in said first data memory means with said standard pattern data stored in said second memory means, for rewriting the input character pattern data stored in said first memory means associated with input patterns corresponding to said standard patterns with stored standard character pattern data associated with said corresponding standard patterns, and for permitting the stored input



pattern data associated with input patterns not corresponding to one of said plurality of standard patterns to remain in said first memory means; and

means for printing the character patterns associated with the pattern data stored in said first memory means,

wherein said printing means prints out a document pattern of one page containing said non-corresponding input patterns, together with an index code locating said non-corresponding input pattern in said document pattern.

4,566,040

ORIGINAL READING DEVICE

Takashi Ozawa, and Mutsuo Takenouchi, both of c/o Fuji Xerox Co., Ltd., Ebina Works, No. 2274, Hongo, Ebina-shi, Kanagawa, Japan

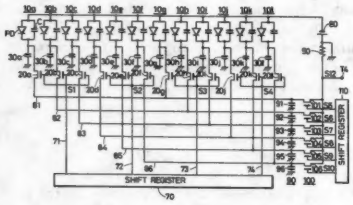
Filed Jun. 21, 1983, Ser. No. 506,265

Claims priority, application Japan, Oct. 4, 1982, 57-175455

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.⁴ G06K *9/00;* **H04N** *3/14*

U.S. Cl. 358—293 **4 Claims**



1. An original reading device in which a plurality of lower electrodes are formed on a substrate, and photoconductors and transparent, electrically conductive upper electrodes are formed on said lower electrodes to form photoelectric conversion elements, comprising:

a plurality of thin film transistors, one of said thin film transistors being provided for each of said photoelectric conversion elements, each of said photoelectric conversion elements being coupled to an input electrode of a corresponding one of said film transistors, and said film transistors being divided into a plurality of alternating even- and odd-ordered groups with gate electrodes of each of said film transistors in each group being connected together;

a first shift register for applying first switching signals to connection points of said gate electrodes of each said group in time sequence;

a first set of connecting lines through which the output electrodes of ones of said thin film transistors in said odd-ordered groups are connected in a predetermined order;

a second set of connecting lines through which output electrodes of said thin film transistors in said even-ordered groups are connected in a predetermined order;

a plurality of temporary storing means, one of said temporary storing means being provided for each of said first and second connecting lines, for temporarily storing the switched photoelectric conversion outputs;

a plurality of MOS transistors, one of said MOS transistors being provided for and having an input electrode coupled to each of said temporary storing means for reading said photoelectric conversion outputs thus temporarily stored, said MOS transistors having output electrodes connected together; and

a second shift register for applying second switching signals to gate electrodes of said MOS transistors in time sequence.

4,566,041

PICTURE SIGNAL DETECTOR AND DETECTION METHOD FOR IMAGE REPRODUCING SYSTEM

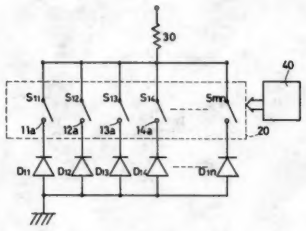
Noriyuki Shimano, Uji, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Jul. 8, 1983, Ser. No. 512,779

Claims priority, application Japan, Oct. 21, 1982, 57-15961[U]

Int. Cl.⁴ H04N *1/02, 1/10, 3/12, 1/04*

U.S. Cl. 358—284 **9 Claims**



1. A detector for a picture signal of an image reproducing system which records the reproduced image of an original picture by using a picture signal, comprising a sensory face composed of multiple photo-diodes arranged in a matrix on an imaging face, and means for selectively enabling current to flow through only some of said photo-diodes to establish a predetermined sensory area.

4,566,042

ELECTROPHOTOGRAPHIC IMAGING APPARATUS BY VARIABLY PLACING PIXEL ELEMENTS

Lysle D. Cahill, Dayton, Ohio, assignor to Coulter Systems Corporation, Bedford, Mass.

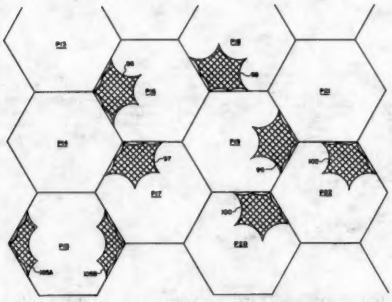
Division of Ser. No. 11,320, Feb. 13, 1979, Pat. No. 4,468,706. This application Aug. 3, 1984, Ser. No. 637,512

Int. Cl.⁴ H04N *1/30*

U.S. Cl. 358—300 **41 Claims**

41. Electrophotographic imaging apparatus including an electrophotographic member having a chargeable photoconductive outer surface capable of being discharged by a composite beam of radiant energy, said apparatus comprising a source of a composite beam of radiant energy rays, means for charging the photoconductive surface of the electrophotographic member, means for scanning said charged surface with the composite beam of radiant energy rays over said electro-

photographic member, said scanning means operable to effect a plurality of movements repeated in side-by-side substantially parallel lines defining a certain direction, means for modulating the rays by turning certain ones on and off, means for moving the beam along one of said parallel lines during modulation of the rays to form a consecutive series of microscopic pixels of discrete groupings of charged and discharged elements along said one line, whereby each formed pixel corresponds to an incremental area of an image in which the areal extent of the



grouping of charged elements remaining after the beam passes is substantially proportional to the desired density of said incremental area providing plural area-weighted patterns for at least some of the densities of said incremental areas, means selecting at random any one of the plural area-weighted patterns corresponding to the desired density, to vary the placement of the groupings in the pixels to decrease undesirable optical effects and means for developing the resulting latent charge image thereby formed.

4,566,043

LASER RECORDING APPARATUS

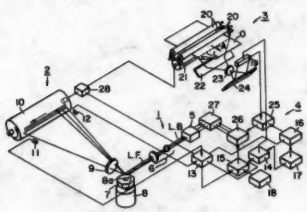
Yasuyuki Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,029, Mar. 17, 1982, abandoned, which is a division of Ser. No. 201,538, Oct. 28, 1980, abandoned. This application Nov. 9, 1984, Ser. No. 670,131

Claims priority, application Japan, Nov. 5, 1979, 54-142939

Int. Cl.[4] H01N *1/30;* **G01D** *15/14*

U.S. Cl. 358—300 **4 Claims**



1. A laser recording apparatus for recording information on a recording medium by use of a plurality of modulated laser beams, comprising:

a photosensitive medium movable in a secondary scanning direction;

a semiconductor laser array including a plurality of laser-radiating sources for radiating a plurality of laser beams;

primary scan means for moving said plurality of laser beams in a primary scanning direction which is substantially perpendicular to the secondary scanning direction, said semiconductor laser array being oriented in such a manner that the beams radiated by said plurality of laser-radiating sources are arranged in a line inclined relative to the primary scanning direction and to the secondary scanning direction on said photosensitive medium;

reading means for reading photoelectrically an original line by line and converting the information carried on the original and represented by each line respectively into time series signals;

memory means having a plurality of memory areas corresponding to each of said plurality of laser-radiating sources, each of said plurality of the memory areas being operative to memorize the information represented by different ones of the lines of the original; and

control means for controlling each of said plurality of laser-radiating sources to radiate a laser beam in accordance with information memorized in a respective different one of said plurality of memory areas.

4,566,044

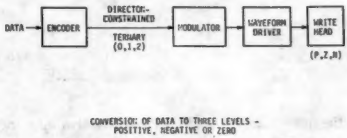
DIRECTION-CONSTRAINED TERNARY CODES USING PEAK AND POLARITY DETECTION

Glen G. Langdon, Jr., and Paul H. Siegel, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,807

Int. Cl.[4] G11B *5/09;* **H04L** *3/00*

U.S. Cl. 360—40 **5 Claims**



1. A method for coding binary symbol strings into ternary symbol strings and for synchronously recording said ternary symbol strings onto a magnetic medium such that clocked recovery of the recorded signal may be subsequently made using peak position and polarity detection, comprising the steps of:

(a) mapping a binary symbol string into a direction-constrained run length limited (RLL) ternary symbol string;

(b) transforming the ternary symbol string into a clocked multilevel recording signal, said recording signal including signal levels in the range $-a<0<+a$, transitions between levels being made as either full-steps ($+a$ to $-a$, $-a$ to $+a$), or half-steps (0 to $\pm a$ or $\pm a$ to 0), consecutively occurring half-steps being limited to pairs of like polarity ($+a$, $+a$; $-a$, $-a$), half-steps of alternate polarity ($+a$, $-a$; $-a$, $+a$) being excluded; and

(c) imprinting a magnetic medium with the recording signal.

4,566,045

SYSTEM FOR THE REPRODUCTION OF SIGNALS STORED ON A MAGNETIC TAPE

Walter Weissensteiner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,414

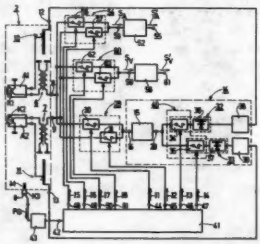
Claims priority, application Austria, Jun. 17, 1983, 2243/83

Int. Cl.[4] G11B *5/56*

U.S. Cl. 360—77 **2 Claims**

1. A system for the reproduction of signals stored on parallel tracks adjacent to one another and running diagonally to the longitudinal axis of the magnetic tape on which they are stored, with a drum-shaped scanning device round whose outer surface the magnetic tape is wound spirally within a predetermined angular range and which, for the purpose of scanning the tracks successively and reproducing the signals stored on them, comprises at least two magnetic heads which can be driven with a rotary movement, of which magnetic

heads only one is at any time in scanning contact with the magnetic tape in cyclically successive first scanning intervals and both of whch are simultaneously in scanning contact with the magnetic tape in second scanning intervals and which are mounted on electromechanical adjustment devices with which, for their guidance over the tracks to be scanned, the magnetic heads are adjustable transversely in relation to the tracks in response to adjustment signals applied to the adjustment devices, for the generation of which signals an adjustment-signal generating circuit is provided, to which circuit, via a first switching device controlled by a control-signal generator, the signals reproduced by the magnetic heads and containing a measurement of the deviations of the magnetic heads from the track are to be applied alternately for the purpose of generating signals corresponding to the adjustment signals for the adjustment devices and which circuit incorporates the storage circuits connected at the inputs to the adjustment devices, to which storage circuits, via a second switching device controlled by the control-signal generator in a similar manner to the first switching device, the signals corresponding



to the adjustment signals can be led alternately and which keep these signals for generation of the adjustment signals stored, the control-signal generator activating in the first scanning intervals the first switching device so as to pass th signals reproduced by the particular magnetic head in scanning contact on to the adjustment-signal generating circuit, and the second switching device so as to pass the signals corresponding to the adjustment signals for the adjustment device carrying the particular magnetic head in scanning contact on to th storage circuit connected at the input to this adjustment circuit, IN WHICH, during the second scanning intervals, the control-signal generator activates the first and second switching devices so as to pass at least once on an alternate time-division multiplex basis the signals reproduced by the two magnetic heads simultaneously in scanning contact on to the adjustment-signal generating circuit and the signals corresponding to the adjustment signals for the adjustment devices carrying the two magnetic heads simultaneously in scanning contact on to the storage circuits connected at the inputs to these adjustment devices.

4,566,046

POSITIONING APPARATUS FOR A MAGNETIC HEAD OF A MAGNETIC DISK DRIVE APPARATUS

Masao Fujiki, Hamura, and Kazukuni Seguchi, Oume, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 598,404, Apr. 11, 1984, abandoned, which is a continuation of Ser. No. 334,911, Dec. 28, 1981, abandoned. This application Jun. 17, 1985, Ser. No. 744,904

Claims priority, application Japan, Jan. 9, 1981, 56-1188

Int. Cl.[4] G11B *21/08, 17/00;* **G05B** *5/01*

U.S. Cl. 360—78 **6 Claims**

1. A positioning apparatus for a magnetic head of a magnetic disk drive apparatus, comprising:

a carriage;

means for cutting off the power to said apparatus;

a magnetic head positioned on said carriage;

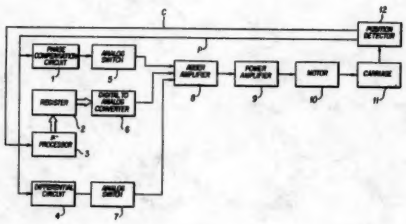
biasing means for returning said carriage holding said magnetic head to a fixed position when said apparatus is in a power-off state, connected to said carriage;

said biasing means supplying said carriage with the biasing force when said magnetic head is positioned in a desired track position;

a closed loop feedback circuit for holding said magnetic head in a desired track position;

means for determining the position of said carriage;

processor means connected to said mean for determining for calculating the force information of said biasing means



acting upon said carriage when said magnetic head is positioned in said desired track position prior to the positioning of said magnetic head in said desired track position; and

force compensation means independent from said closed loop feedback circuit for supplying said carriage with an opposite force equivalent to the force of said biasing means responding to said force information provided by said processor means when said magnetic head is positioned in said desired track position.

4,566,047

MODE SETTING ARRANGEMENT FOR USE IN VIDEO TAPE RECORDER

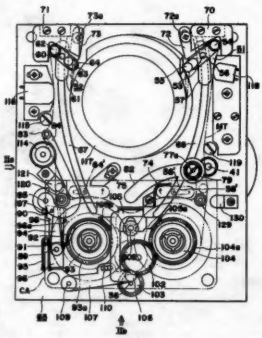
Kunio Hirose, Joyo; Tadatoshi Hukuta, Hirakata; Hiroshi Horiuchi, Neyagawa; Toyozo Urakami, Kobe, and Minoru Yoshida, Neyagawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Aug. 5, 1982, Ser. No. 405,557

Claims priority, application Japan, Aug. 5, 1981, 56-123484

Int. Cl.[4] G11B *15/66*

U.S. Cl. 360—85 **11 Claims**



1. In a video tape recorder having means for receiving a cassette having a pair of reels and magnetic tape wound thereon for feed from one of said reels to the other of said reels, as said reels are rotated in forward and reverse directions,

means, including reel bases, a capstan and a pinch roller, in said recorder for rotating said reels and advancing said magnetic tape at a predetermined speed during the recording and the playback of the recording on said magnetic tape and for advancing said magnetic tape at a higher speed when said magnetic tape is being wound from one reel to the other reel without recording and playback, a mode setting means in said recorder comprising:

first cam means;

a loading motor having means for positioning said first cam means;

means for braking said reel bases and said reels thereon and preventing said magnetic tape from being advanced when said loading motor and said positioning means thereon has positioned said first cam means in a first position;

means for releasing said braking and tape advance preventing means when said loading motor and said positioning means thereon has positioned said first cam means in a second position, and for rotating said pair of reel bases for advancing said tape at said higher speed;

means for holding said pinch roller against said capstan with the application of pressure, and with said magnetic tape passing over said pinch roller when said loading motor and said positioning means thereon has positioned said first cam means in a third position;

a pivotally mounted lever means for supporting said pinch roller;

a second cam means for pivoting said lever means; and

means interconnecting said first cam means and said second cam means for pivoting said lever means to a first position for positioning said pinch roller inside said cassette with said magnetic tape passing thereover when said loading motor has positioned said first cam means in said first position and said reel bases and said reels are braked and for pivoting said lever means to a second position for positioning said pinch roller with said magnetic tape passing thereover against said capstan when said loading motor has positioned said first cam means in said third position.

4,566,048

TAPE CASSETTE ADAPTER

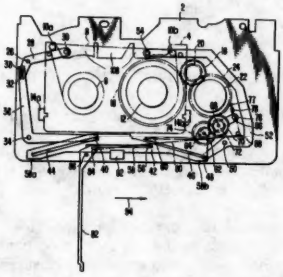
Tomokazu Tokunaga, Neyagawa; Masataka Izaki, Yawata; Jirou Kajino, Neyagawa, and Toshibumi Kamiyama, Tsuyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 423,212

Claims priority, application Japan, Sep. 26, 1981, 56-152748; Oct. 23, 1981, 56-170379

Int. Cl.[4] G11B *15/32*; G03B *1/04*

U.S. Cl. 360—94 **8 Claims**



1. A tape cassette adapter for enabling a compact tape cassette to be used in a standard size magnetic tape recording and/or reproducing apparatus, said adapter comprising:

a chassis having therein a recess for receiving a compact tape cassette which includes a shorter length tape, a smaller size and a lighter weight than a standard size tape cassette, a take-up reel and a supply reel on which the tape is wound, and a cut-away portion through which the tape may be drawn outwardly of the cassette;

tape drawing means, mounted on said chassis and movable between an inoperative position disposed at the cut-away portion and an operative position spaced outwardly of the cut-away portion, for drawing the tape through the cut-away portion from the compact tape cassette such that the path of the tape substantially is the same as that of a standard tape cassette;

reel rotating means, mounted on said chassis, for winding back onto the take-up reel of the compact tape cassette that length of the tape previously drawn from the cassette by said tape drawing means;

a slide member mounted on said chassis for reciprocal sliding movement in opposite directions longitudinally of said chassis;

means connecting said slide member to said tape drawing means for transmitting longitudinal reciprocal movement of said slide member into movement of said tape drawing means between said inoperative and operative positions thereof;

means connecting said slide member to said reel rotating means for operating said reel rotating means only upon sliding movement of said slide member in a respective said longitudinal direction which causes said tape drawing means to move from said operative position thereof to said inoperative position thereof, said means connecting said slide member to said reel rotating means comprising at least first and second gears connected by a one way clutch, means for transducing sliding movement of said slide member to rotation of said first gear, said transducing means comprising a rack on said slide member, and a pinion mounted for engagement with said rack and said first gear, and said second gear being engageable with said reel rotating means; and

disengagement means for selectively separating connection between said slide member and said reel rotating means.

4,566,049

TRANSDUCER HEAD INDEXING DEVICE AND METHOD

Dewey M. Sims, Jr., Wayne, and Robert T. Haas, Milan, both of Mich., assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 29, 1982, Ser. No. 444,868

Int. Cl.[4] G11B *21/08, 21/10, 21/24*

U.S. Cl. 360—106 **5 Claims**

1. An apparatus for positioning a transducer head relative to a recording medium wherein

said head is carried by a carrier mounted for linear translational movement substantially parallel to a surface of said recording medium,

and said carrier supports a cam follower means,

said carrier and said cam follower means resiliently biased against a camming means,

said apparatus comprising:

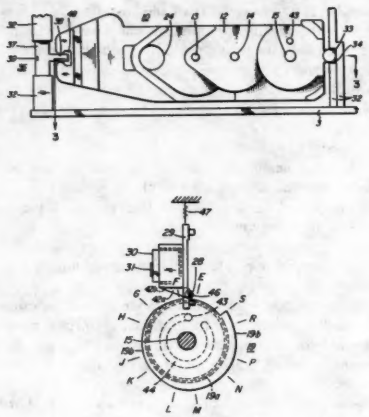
a gear train, including both a motor and said camming means,

all pivotally mounted as a single unit such that said camming means contacts said cam follower means and the motor controllably drives said camming means via said gear train, and

means for controllably pivoting the entire gear train,

and adjustments can be made to the position of said head relative to said medium

such that said head can be controllably linearly translated substantially parallel to said surface of the recording medium either by pivoting said entire gear train or by rotatably driving said camming means.



4,566,050

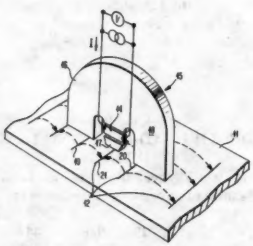
SKEW INSENSITIVE MAGNETIC READ HEAD

David L. Beam, Cary, and Glen P. Double, Charlotte, both of N.C., assignors to International Business Machines Corp. (IBM), Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,916

Int. Cl.[4] G11B *5/127, 5/33, 5/187*

U.S. Cl. 360—113 **10 Claims**



1. In a magnetic reader for detecting binary flux transitions recorded on a surface of a magnetic media, a read head comprising:

a substantially planar magnetic resistive element mounted within said head so as to be perpendicular to the surface of said media when detecting said transitions,

a magnetically permeable yoke disposed substantially coplanar with said magnetic resistive element, which together define a magnetic circuit, said yoke having at least one substantially coplanar leg portion providing a pole face adjacent said surface and being dimensioned to bridge over at least one flux transition adjacent to a second flux transition beneath said element when the plane of said element is skewed with respect to flux transitions on said surface, and providing a further substantially coplanar pole face positioned adjacent the edge of said element most distant from said surface to couple flux to said magnetoresistive element, and

conductor means electrically connected to two spaced points on said magnetoresistive element for detecting any change in the electrical resistance thereof in response to a flux transition.

4,566,051

INVERTER PROTECTED IN RESPECT OF THE RATES OF INCREASE OF CURRENT AND VOLTAGE

Risto Komulainen, Helsinki, Finland, assignor to Kymi-Stromberg OY, Helsinki, Finland

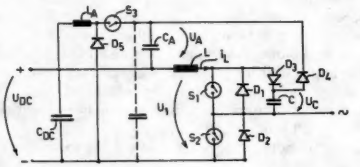
PCT No. PCT/FI83/00058, § 371 Date Apr. 17, 1984, § 102(e) Date Apr. 17, 1984, PCT Pub. No. WO84/00858, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 19, 1983, Ser. No. 601,626

Claims priority, application Finland, Aug. 19, 1982, 822885

Int. Cl.[4] H02H *7/122*

U.S. Cl. 361—13 **3 Claims**



1. An inverter protected from surges of current and voltage, in which said surges represent changes in the rates of increase of current and voltage, said inverter comprising:

first circuit means comprising a filter capacitor and a choke for protecting said inverter from said current and voltage surges;

at least two controlled semiconductor switches for each phase of said inverter coupled to said first circuit means;

second circuit means, comprising a series connected capacitor and diode, for each phase of said inverter for protecting against voltage surfaces, said second circuit means for each phase of said inverter being connected in parallel with one of said at least two controlled semiconductor switches for each phase of said inverter;

storage means, comprising a storage capacitor, for storing energy resulting from said current and voltage surges, said storage means being connected to said first circuit means;

energy transfer means, for each phase of said inverter, for transferring energy from said storage means to said filter capacitor of said first circuit means, said energy transfer means comprising a diode connected between the connection point of said series connected capacitor and diode and said storage capacitor; and

breaker means coupled to each of said energy transfer means for regulating the transfer of energy between said storage means to said filter capacitor.

4,566,052

OVERVOLTAGE PROTECTION CIRCUIT FOR POWER SUPPLY

Neil A. Kammiller, Lakewood, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Division of Ser. No. 402,628, Jul. 28, 1982, Pat. No. 4,525,674. This application Nov. 2, 1984, Ser. No. 667,724

Int. Cl.[4] H02H *3/20*

U.S. Cl. 361—18 **4 Claims**

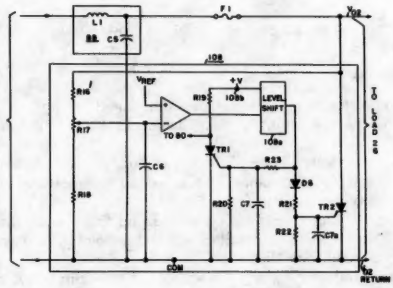
1. A circuit for use in a power supply of the type which includes a power switching means and a fuse connected in series with one of its two output terminals, said supply including means which attempts to turn off said power switching means in response to a signal from said circuit when the output voltage of the supply exceeds a reference signal representative of a predetermined amplitude of said output voltage and said circuit also capable of providing a short circuit across said output terminals, said circuit comprising:

means connected to said output terminals for generating a signal representative of said supply output voltage;

means responsive to said signal representative of said output voltage and said reference signal for generating an overvoltage signal when said output voltage exceeds said reference signal;

first semiconductor means having a control electrode connected to said overvoltage signal generating means and responsive to said overvoltage signal for turning on and generating said supply turn-off signal said semiconductor means having a turn-on threshold;

second semiconductor means having a control electrode and a turn-on threshold said second semiconductor means being connected to said output terminals to provide a



short circuit thereacross when said second semiconductor means turns on; and

means connected between said overvoltage signal generating means and said second semiconductor means control electrode for increasing said second means turn-on threshold to be greater than said first semiconductor means turn-on threshold, said second means turning on in response to said overvoltage signal later than the turn-on of said first semiconductor means and only if said turn-off means has not turned off said supply and only when said overvoltage signal exceeds said second semiconductor means increased turn-on threshold, the turning on of said second means providing said short circuit across said output terminals such that current sufficient to open said fuse may flow therethrough.

4,566,053

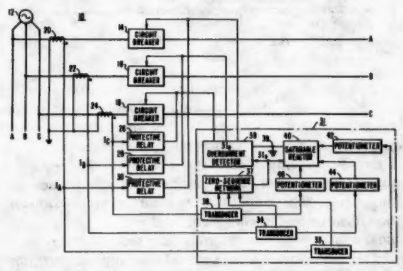
GROUND-FAULT PROTECTIVE RELAY

William A. Strickland, Jr., Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 10, 1984, Ser. No. 629,532

Int. Cl.[4] H02H *3/16*

U.S. Cl. 361—42 **6 Claims**



1. A protective relay for detecting ground faults on a three-phase electrical power distribution system with phase conductors A, B, and C, said protective relay comprising:

means for providing an unbalanced current signal representative of unbalanced current in the three-phase electrical power distribution system;

first, second, and third current transformer means for producing first, second, and third current signals representative of the current flowing on the phase conductors A, B, and C, respectively;

overcurrent fault detecting means responsive to said unbalanced current signal for indicating a fault when the unbalanced current exceeds a predetermined limit; and

impedance means responsive to said first, second, and third current signals, wherein said impedance means has an impedance dependent on the value of said first, second, and third current signals, and wherein said impedance means is connected in shunt with said overcurrent fault detecting means such said unbalanced current signal is input to said impedance means and said overcurrent fault detecting means, wherein the amount of said unbalanced current signal flowing into said overcurrent fault detecting means depends upon the impedance of said impedance means, and therefore varies as a function of the current flowing through the three-phase electrical power distribution system.

4,566,054

RACK FOR MOUNTING TWO ELECTRONIC DEVICES CONNECTABLE TO AND DISCONNECTABLE FROM EACH OTHER

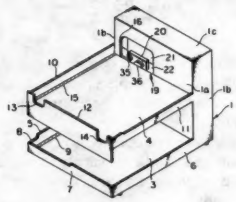
Mituhiko Shimoda; Masahiro Koinuma, and Yoshitaka Ohta, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,733

Claims priority, application Japan, Jul. 20, 1983, 58-111503[U]

Int. Cl.[4] H05K *7/00*

U.S. Cl. 361—422 **4 Claims**



1. A rack for mounting two electronic devices connectable to and disconnectable from each other, which rack comprises:

(a) a rack body vertically extending and having a wiring space inside thereof;

(b) a first mount shelf for mounting a first electronic device, said first mount shelf being integrally provided with a lower portion of a front wall of the rack body;

(c) a second mount shelf for mounting a second electronic device, said second mount shelf being integrally provided with an upper portion of the front wall of the rack body;

(d) an opening formed in the front wall of the rack body, said opening bridging an upper portion and a lower portion of the second mount shelf;

(e) side plates upwardly projected at both sides of each of the mount shelves;

(f) a front side plate detachably attached between front ends of the side plates of each of the mount shelves;

(g) a fixture for mounting a connector holder, said fixture being provided at a rear end of the second mount shelf and projecting into said wiring space from said opening in the front wall of the rack body; and

(h) the connector holder being mounted on the fixture and having means for positional adjustment in right and left directions with respect to the front wall of the rack body and having means for holding a connector of a connection cord of the first electronic device mounted on the first mount shelf in such a manner that a connecting projection of the connector may project forwardly from the front wall of the rack body.

4,566,055

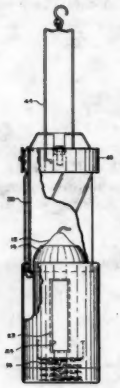
CANDLE HOLDER

Gary W. Klees, 9130 SE. 72nd Pl., and Gregory L. Draper, 5340 Lansdowne La., both of Mercer Island, Wash. 98040

Continuation of Ser. No. 412,146, Aug. 22, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,545

Int. Cl.⁴ F21V *35/00*; F21L *19/00*

U.S. Cl. 362—162 **11 Claims**



1. A portable candle holder comprising:

an outer rigid cover having upper and lower ends, said upper end having at least three circumferentially spaced alignment notches;

an inner candle receiver coupled to said cover;

means for pushing a candle upwardly in said candle receiver;

a glass lens having upper and lower portions including upper and lower ends;

a heat shield overlying and engaging the upper end of said lens for dissipating the heat from a candle flame;

means for securing a bail to said holder; and

coupling means for positioning said lens telescopically between retracted and extended positions within and extending out of said cover, respectively, said coupling means including at least three circumferentially spaced, metallic, flexible, elastic bars, each of said bars having an upper end and a lower end, said upper bar ends pressing directly down on said lens upper end, said lower bar ends pressing directly upon said lens lower end, said bars spaced from said lens at all other locations, said bars extending radially outward against, being frictionally engaged within and telescopically guided by said cover notches to prevent circumferential rotation of the bars and the lens with respect to the cover and for holding said lens at least in said axially extended and retracted positions above and within said cover, respectively, said cover spaced from said bars at all other locations when in the extended position, limiting structural heat-conductive paths to transfer heat from the lens to the cover through the bars.

4,566,056

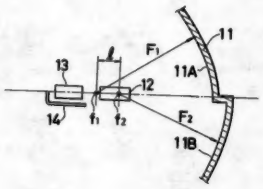
HEADLAMP FOR VEHICLE

Tadashi Kouchi, Fuchu, and Yoshiharu Urakami, Kawasaki, both of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,573

Int. Cl.⁴ F21V *7/00*; H01J *5/16*

U.S. Cl. 362—297 **4 Claims**



1. A headlamp for a vehicle comprising:

a reflector having a main filament and a sub-filament disposed on the same axis;

said reflector having a first paraboloidal surface having a first focal distance and a second paraboloidal surface having a second focal distance;

said reflector having first and second focal points disposed on the same longitudinal axis and defined by said first and second focal distances;

said reflector having a space of 0.5 to 4 mm between said first and second focal points; and

said second focal point being located at the same location as said main filament.

4,566,057

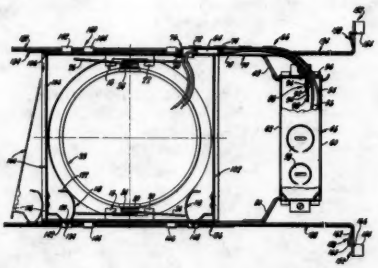
RECESSED LIGHTING HOUSING

James B. Druffel, Oakland, Calif., assignor to Prescolite, Inc., San Leandro, Calif.

Division of Ser. No. 477,377, Mar. 21, 1983, Pat. No. 4,471,416. This application Jun. 4, 1984, Ser. No. 616,614

Int. Cl.⁴ F21S *1/06*

U.S. Cl. 362—364 **1 Claim**



1. A door used in conjunction with a housing including a wall portion forming an enclosure and possessing an entrance to the enclosure, the housing further including an opening through the wall portion, comprising:

a. a member having a first end portion and a second end portion, said first end portion including means for hingedly attaching said first end portion to the housing at the entrance to the enclosure; and

b. means for removably latching said second end portion of said member to the housing, said latching means comprising a spring element connected to and projecting from said second end portion of said member, said spring ele-

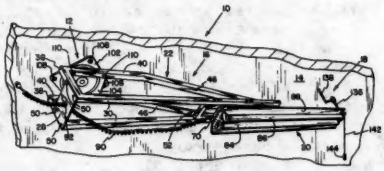
ment having a bent portion capable of entering the housing wall portion opening from the inside of the housing enclosure, occupying the housing wall portion opening, and being accessible from the outside of the housing enclosure.

4,566,058

BOOM SUPPORTED LIGHT FIXTURE

Norton C. Barnett, 23570 Ironwood Dr., Elkhart, Ind. 46516

Filed Jul. 9, 1984, Ser. No. 628,811
Int. Cl.[4] F21S *1/02*
U.S. Cl. 362—430 **17 Claims**



1. A boom assembly for supporting an elongated light fixture, comprising:

an elongated frame including two arms connected together in spaced apart relationship and having a pivot end portion and an opposite remote end portion,

a mountable swivel connected to said pivot end portion for pivoting said elongated frame thereabout, whereby said remote end portion is movable in a generally circular path in a plane generally perpendicular to the axis of rotation of said swivel and having said swivel at the center thereof,

a carriage adjustably mounted between said two arms at said remote end portion of said frame whereby said carriage is selectively axially adjustable radially outwardly from said swivel;

a holding means secured to said carriage for selectively positively supporting said carriage at any desired point along the circular path, and

said carriage adapted to have connected thereto an elongated illuminating device, whereby illumination can be provided at selected areas.

4,566,059

CONVERTER WITH LOSSLESS SNUBBING COMPONENTS

George C. Gallios, Setauket; Derek Whitehead, Locust Valley, and Richard Seleski, Huntington Station, all of N.Y., assignors to Venus Scientific Inc., Farmingdale, N.Y.

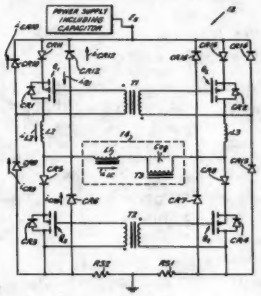
Filed Jul. 21, 1983, Ser. No. 516,146
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—17 **25 Claims**

1. A power converter, comprising:

a DC to AC converter circuit including a plurality of transistors which are switched on and off to convert a DC signal into an AC signal, said converter circuit including a diode which is alternatively forward and reverse biased during the operation of said converter circuit, said diode having a reverse recovery period whenever said diode is switched from a forward to a reverse biased condition during which the reverse resistance of said diode is substantially zero;

an inductor connected to said diode for limiting the current through said diode during said reverse recovery period such that shoot through currents pass through said diode are limited to desired levels; and

an output circuit for applying the output of said DC to AC converter circuit to a load; and



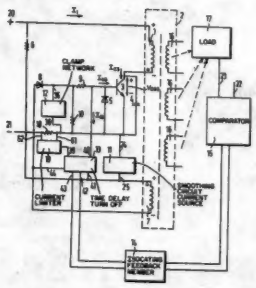
means for discharging excess power stored in said inductor due to shoot through currents into said output circuit once said diode has completed said reverse recovery period.

4,566,060

DC-TO-AC VOLTAGE CONVERTER HAVING GALVANICALLY SEPARATED INPUT AND OUTPUT(S)

Gerben S. Hoeksma, Winterswijk, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Filed Aug. 31, 1983, Ser. No. 528,153
Claims priority, application Netherlands, Sep. 6, 1982, 8203474
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 **23 Claims**



1. A DC-to-AC voltage converter for the supply of power to at least one load, comprising an input circuit and at least one output circuit galvanically separated from said input circuit, and a converter transformer, characterized in that a primary winding of the converter transformer is series-connected to a switching transistor, which series circuit arrangement is connected between a positive input terminal and a negative input terminal, with one or more resonance capacitors being connected in parallel with the collector-emitter circuit of the switching transistor and/or in parallel with said primary winding; there being provided control means for said switching transistor, with the resonance capacitor(s) and said primary winding being dimensioned so that, under all anticipated load conditions of the converter, including short-circuiting of the output circuits, the control means causes the voltage across the collector-emitter circuit of the switching transistor, after the latter has become non-conductive, to fall back to a very low value before the switching transistor is again driven into the

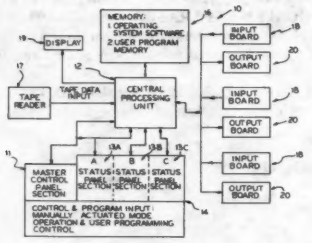
conductive state and dimensioned such that the backfire current through the base-collector diode of said switching transistor results in a charge storage in said switching transistor which is adapted to supply a substantial part of the driving power for said switching transistor, said backfire current being determined at least in part by said load and hence said charge storage is adapted to automatically follow said load; said converter transformer having a first auxiliary winding strongly coupled with said primary winding and, at least in part, providing the driving power required for the switching transistor; there being provided a time-delay and turn-off circuit energized and synchronized by at least one second auxiliary winding of the converter transformer; there being provided a smoothing circuit providing the driving power for turning off the switching transistor, which driving power is withdrawn from a third auxiliary winding of the converter transformer.

4,566,061

METHOD AND MEANS OF MANUAL INPUT OF PROGRAMS INTO INDUSTRIAL PROCESS PROGRAMMABLE CONTROLLER SYSTEMS

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321, and Patrick H. Eich, 954 Cypress Point Dr., Crown Point, Ind. 46307

Filed Sep. 15, 1983, Ser. No. 532,316
Int. Cl.[4] G06K *21/00*; G06C *15/00*
U.S. Cl. 364—146 **21 Claims**



1. The method of programming a programmable controller system for controlling an industrial process, in which the system includes a central processing unit, operating system software and user program memory storage means for said unit means for entering and storing binary notation system fashion program defining computer data bits in the memory storage means, circuit means for operatively connecting the industrial process I/O devices to said unit, control panel means including means for setting said unit to operate in manual and automatic modes, respectively, a work sheet delineated to define on its working face a series of vertical columns to which the process inputs and outputs of the industrial process are respectively assigned and a series of horizontal channels consecutively listing the steps of the process in operational sequence, with said columns and said channels intersecting to form individual work sheet data bit receiving blank areas for selectively receiving manual entry marks binary notation system faashion indicating I/O device functions for each step of said process in accordance with a predetermined program of operation for said process, and with said channels each having computer data word end indicia at either end of same between which said blank areas are disposed to form for each channel a computer data word space of the same predetermined length, means for manually marking said work sheet word spaces binary rotation system fashion to indicate I/O device function for each step in the process in accordance with the predetermined program of operation for said process to provide the computer data word for each step of said process, with the circuit means for operatively connecting the I/O devices to said unit comprising one or more status panel keyboard means integrated with said control panel means and including for each such I/O function separate key means and visible off-on signal means therefor, respectively, for controlling the individual I/O switches and electrically connected to provide and indicate visually on said status panel means the status of said I/O device function for any one step of a program in binary notation system oriented computer word arrangement in accordance with any such program of operation, and with the memory means having a memory map for accepting programs designated by program number, and including master keyboard panel means including keys for setting said unit in manual and automatic modes, respectively, said master, keyboard panel means also including and operable when said unit is in its manual mode, a program select key for locating a desired program slot site of said memory map by program number, a manual programming key for setting said unit for changing the program entries in said memory means, a program step key for setting said unit to accept into the memory means in a step by step manner the predetermined program transmitted to said unit via said status panel keyboard means for changing the memory means program entries, key means for advancing any selected program entered into said memory means step by step from step one thereof for reviewing visually on said status panel means the status of the program I/O functions entered in said memory means for each such program step, and means for displaying the program number and step identities of programs of the memory means, the method of entering such predetermined program into the memory means when the control keyboard panel is operated to place said unit in its manual mode, including the steps of:

locating in the memory means map the desired site thereof, for said predetermined program by actuating said program select key,

conditioning said unit for changing the program entries in said memory means by setting said unit to accept into the memory means such predetermined program at the site located by the practice of said locating step,

setting said individual I/O switches in accordance with the binary notation system fashion oriented computer data word arrangement thereof for the first step of said such predetermined program as shown on said work sheet by manually actuating as needed the respective I/O key means of said status panels keyboard means for transmitting such first step computer data word to said unit,

entering said first step of said such predetermined program into the memory means at said located site by actuating said program step key,

repeating the last mentioned I/O switch setting and entering steps for each consecutive step of said such predetermined program for entering same consecutively into said memory means following consecutively said first step of said predetermined program,

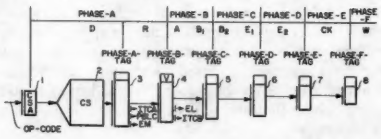
and returning said unit to said manual operation mode.

4,566,062

TIMING CONTROL SYSTEM IN DATA PROCESSOR

Katsumi Ohnishi; Yoshihiro Mizushima, and Kiyosumi Sato, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1983, Ser. No. 508,503
Claims priority, application Japan, Jun. 28, 1982, 57-110971
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—200 **6 Claims**



1. A timing control system for a pipeline processor which executes micro-instructions including a dummy instruction having first and second control fields, comprising:

a pipeline processing control circuit comprising:

a first TAG register, operatively connected to the pipeline processor, receiving the micro-instructions, and having an instruction TAG control phase-A portion for holding the first control field and an execution mask portion for holding the second control field; and

a second TAG register operatively connected to the pipeline processor and said first TAG register and having an instruction TAG control portion;

decoder means, operatively connected to the instruction TAG control phase-A portion of said first TAG register, for decoding the first control field and outputting an identifying signal when the dummy instruction is decoded;

counter means, operatively connected to the execution mask portion of said first TAG register, the instruction TAG control portion of said second TAG register and said decoder means, for receiving an initial value from the execution mask portion of said first TAG register, storing the initial value in the instruction TAG control portion of said second TAG register and decrementing the contents of the instruction TAG control portion of said second TAG register; and

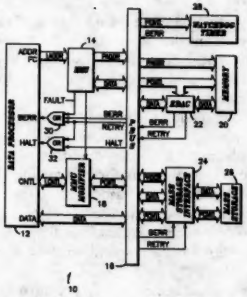
end detecting means, operatively connected to said first and second TAG registers, for outputting an end of processing signal indicating the end of the execution of the dummy instruction when the contents of the instruction TAG control portion of said second TAG register reaches zero.

4,566,063

DATA PROCESSOR WHICH CAN REPEAT THE EXECUTION OF INSTRUCTION LOOPS WITH MINIMAL INSTRUCTION FETCHES

John Zolnowsky; Douglas B. MacGregor, both of Austin, Tex., and Kim Eckert, Downingtown, Pa., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 17, 1983, Ser. No. 542,800
Int. Cl.[4] G06F *9/38*
U.S. Cl. 364—200 **5 Claims**



1. A method for selectively repeating the execution of an instruction in a data processor comprising:

an instruction pipeline having at least input and output stages;

bus cycle control means for selectively transferring instructions into the input stage of the pipeline;

pipeline control means for selectively advancing the instructions from the input stage of the pipeline to the output stage thereof; and

instruction execution means for executing the instruction in the output stage of the pipeline;

the method comprising the steps of:

selectively setting a loop control bit;

sequentially enabling the bus cycle control means and the pipeline control means to advance an instruction to the output stage of the pipeline;

enabling the instruction execution means to execute said instruction at the output stage of the pipeline; and

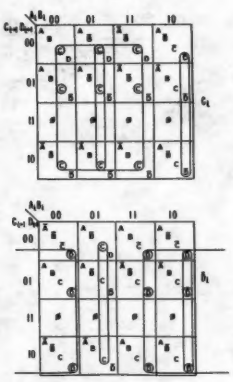
if said loop control bit is set, enabling the pipeline control means to advance the instructions in the pipeline while inserting said instruction into a selected stage of the pipeline.

4,566,064

COMBINATIONAL LOGIC STRUCTURE USING PASS TRANSISTORS

Sterling Whitaker, Cubbuck, Id., assignor to American Microsystems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 376,895, May 10, 1982. This application Dec. 8, 1982, Ser. No. 447,817
Int. Cl.[4] G06F *15/56*
U.S. Cl. 364—300 **6 Claims**



1. The method of constructing a logic circuit to represent a given logical function, said circuit using as its basic element the PASS transistor, said PASS transistor having an input lead, an output lead and a control lead controlled by a control function, said method comprising;

establishing a first truth table of the desired logic function, said truth table depicting the state of the first output variable or variables for each state of the input variables;

said step of establishing said first truth table including entering into said first truth table for each input state the input variables which, when passed to the output lead of a PASS transistor, yield the desired output variable or variables, said input variables comprising the PASS function for that state;

establishing a plurality of second truth tables, each said second truth table having fewer variables than said first truth table, each said second truth table depicting one or more of a plurality of second output variables;

said step of establishing said second truth table including, for each said second truth table, entering the PASS function for each state of the input variables into an associated modified Karnaugh map wherein each state of the modified Karnaugh map contains the particular input variables which yield the desired output variable, said particular input variables being called the PASS function for that state of input variables;

identifying the identical PASS variables in each PASS function for each state of input variables such that every state has at least one PASS variable identified;

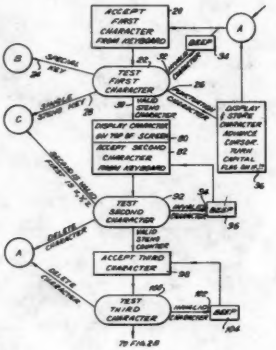
identifying a control function among the input variables which is independent of the identical PASS variables previously identified, for controlling said control lead of said PASS transistor; and

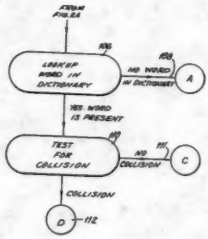
constructing a logic circuit using said PASS transistors in accordance with said identified PASS variables and said control function.

4,566,065
COMPUTER AIDED STENOGRAPHIC SYSTEM

Kalman Toth, 24 Jean La., Monsey, N.Y. 10952

Filed Apr. 22, 1983, Ser. No. 487,517
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—300 1 Claim





1. A method for rapidly transferring information from a written or spoken form into a typewriter or printed form comprising the steps of:

assigning a first numeric code to a predetermined first group of frequently used words,

assigning a two letter code to a predetermined second group of frequently used words,

identifying a predetermined third group of words by the first two letters and the last letter of a particular word within said third group of words,

providing a second numeric code to identify words within said third group of words having the same first two and last letters, and

entering into an appropriately programmed data processing system a combination of said first numeric code, said two letter code, said first two and last letters of a desired word, and said second numeric code to produce information in a typed or printed form.

4,566,066
SECURITIES VALUATION SYSTEM

Frederic C. Towers, 8033 Herb Farm Dr., Bethesda, Md. 20034

Continuation of Ser. No. 279,781, Aug. 11, 1972, Pat. No. 4,334,270. This application Jun. 4, 1982, Ser. No. 385,323
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.[4] G06F *15/21*
U.S. Cl. 364—408 1 Claim

1. A stored program data processing system including a digital computer having a memory and logic means for storing and retrieving and displaying information about investment securities, the combination including:

(a) a plurality of input/output terminals operatively connected to said system;

(b) a memory providing a plurality of data storage areas for data;

(c) a first data storage area for system data comprising records of data hereinafter termed priced securities;

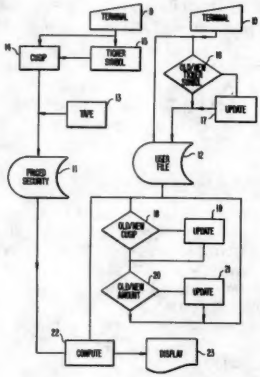
(d) a second data storage area comprising records of data hereinafter termed a user file;

(e) each user file including an area reserved for the date of the data, the identity of the security, and the amount of the security holding;

(f) key means to access and edit each of said priced security records;

(g) means to access and edit each of said user file records;

(h) a second key means to access each of said priced security records;



(i) a plurality of conversion means for translation of a signal of one key means into a signal for another key means;

(j) a first conversion means for translating a key representing a prior memory address of a priced security to a current memory address;

(k) a second conversion means for translating an alphameric key representing a prior security identification into a current alphameric key representative of said security;

(l) a third conversion means for converting the data in the amount field in a user file based on its date of entry to data corresponding to the current amount of said holding;

(m) means to retrieve a selected user file;

(n) means to retrieve corresponding data from said priced securities files;

(o) means to compute and display the current value of said selected portfolio of securities.

4,566,067
SPEED CONTROL APPARATUS AND METHOD FOR RAPID TRANSIT VEHICLES

Arun P. Sahasrabudhe, West Mifflin, and Robert J. DiSilvestro, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1983, Ser. No. 489,989
Int. Cl.[4] G06F *15/50;* B61L *3/20, 3/06*
U.S. Cl. 364—426 10 Claims

1. In speed control apparatus for a vehicle including a propulsion motor and reponsive to an input command speed, the combination of:

means responsive to the input command speed for determining a desired operating state for said propulsion motor,

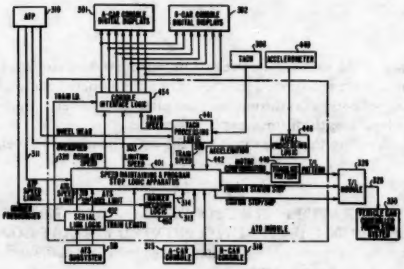
means for determining a predetermined speed control band in relation to said command speed,

means for determining a first time period in relation to said speed band and in accordance with the speed of the vehicle and the acceleration of the vehicle,

means for determining a second time period in accordance with the operating characteristic of said motor and the mass of said vehicle, and

means for comparing the first time period with the second time period to determine when a transition of the motor is made to said desired state.

7. The method of speed control for a vehicle having a propulsion motor and a present speed and being responsive to a first command speed limit, including the steps of



determining desired speed band limits for said vehicle in response to the first command speed limit,

determining a first time required for the vehicle speed to change from the present speed to a predetermined one of said speed band limits in relation to the acceleration of the vehicle,

determining a second time required for the vehicle tractive effort to change from the present tractive effort to a desired tractive effort in relation to said one speed band limit, a known operational characteristic of said motor and the mass of the vehicle, and

comparing the first time with the second time to control a change of the vehicle speed from the present speed to said one speed band limit.

4,566,068

CHARACTERISTIC SIGNAL GENERATOR FOR AN ELECTRONICALLY CONTROLLED FUEL INJECTION PUMP

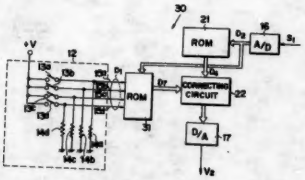
Yuji Iwasaki, Sakado; Kyoichi Fujimori, Higashimatsuyama, and Yasuhiro Hiyama, Musashino, all of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,597

Claims priority, application Japan, Nov. 26, 1981, 56-174732; Dec. 4, 1981, 56-180125

Int. Cl.⁴ F02D *5/02;* **F02M** *59/20*

U.S. Cl. 364—431.05 **4 Claims**



1. A characteristic signal generator which produces a characteristic signal determined from a characteristic curve for the maximum amount of fuel to be injected into an internal combustion engine from an electronically controlled fuel injection pump, said signal generator comprising:

a first means for producing first data relating to the engine speed at each instant;

a first memory for storing a set of basic characteristic data representing a basic characteristic curve for the maximum amount of fuel to be injected, said basic characteristic data being a function of the engine speed where said first memory outputs a desired subset of the basic characteristic data in response to the first data from said first means;

a second memory for storing a plurality of sets of correcting data for correcting the basic characteristic curve as represented by the basic characteristic data stored in said first memory;

a second means for producing second data for selecting a desired set of correcting data in said second memory, the second data being applied to said second memory to select the desired set of correcting data;

means responsive to the data from said first and second memories for correcting the basic characteristic data by the use of the correcting data; and

means for converting the data from said correcting means into a characteristic signal for controlling the maximum amount of fuel to be injected.

4,566,069

ELECTRONIC CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

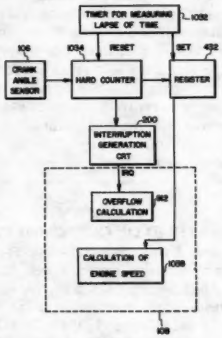
Takeshi Hirayama, Mito; Matsuo Amano; Shinichi Sakamoto, both of Hitachi; Masami Shiida, Mito, and Shirou Baba, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 313,831, Oct. 22, 1981, abandoned. This application Sep. 21, 1984, Ser. No. 652,892

Claims priority, application Japan, Oct. 22, 1980, 55-146935

Int. Cl.⁴ G05B *15/02;* **G01P** *3/48;* **F02B** *5/02*

U.S. Cl. 364—431.12 **7 Claims**



1. In an engine control apparatus having a crank angle sensor for producing an output signal at every predetermined rotational angle of an engine shaft, an arithmetic processing unit for executing arithmetic operations in accordance with a program, and an input/output circuit, wherein said input/output circuit includes timer means for producing a timing signal every time a preset period for measuring the rotational speed of the engine elapses, a crank angle counter for counting output pulses derived from said crank angle sensor, an overflow detecting means for detecting each occurrence of an overflow in said counter and for generating an overflow signal in response thereto;

a method of measuring the rotational speed of said engine in which said arithmetic processing unit executes the steps of:

(a) counting the number of overflow signals produced at the output from said overflow detecting means while said crank angle counter counts the output pulses from said crank angle sensor;
(b) reading the count value of said crank angle counter in response to the timing signal output from said timer means;
(c) correcting the read counter value of said crank angle counter by an amount based on the count value of said number of overflow signals and the maximum count capacity of said crank angle counter;
(d) determining the rotational speed of the engine on the basis of the corrected read counter value;
(e) controlling the operation of the engine on the basis of the predetermined rotational speed;
(f) resetting to zero the count of said number of overflow signals and the count value of said crank angle counter; and
(g) repeating the steps (a) to (f).

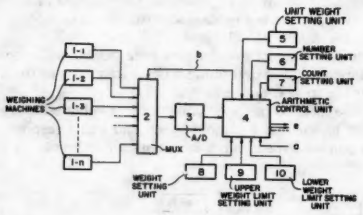
5. In an engine control apparatus having a crank angle sensor for producing an output signal at every predetermined rotational angle of an engine shaft, an arithmetic processing unit for executing arithmetic operations in accordance with a stored program, memory means connected to said arithmetic processing unit for storing programs and data, and an input-/output circuit connected to said arithmetic processing unit and said memory means, means for measuring the rotational speed of the engine, comprising: timer means for producing a timing signal every time a preset period for measuring the rotational speed of the engine elapses; a crank angle counter connected to said crank angle sensor and having a predetermined maximum count capacity which is less than the count value required for a maximum engine rotational speed to be measured for counting the output pulses derived from said crank angle sensor; and overflow detecting means connected to said crank angle counter for detecting each occurrence of an overflow in said crank angle counter and for generating an overflow signal in response thereto; said arithmetic processing unit operating on the basis of said stored programs to count the number of overflow signals generated while said crank angle counter counts the output pulses from said crank angle sensor, to read the count value of said crank angle counter in response to the timing signal output from said timer means, to correct the count value read from said crank angle sensor on the basis of the maximum count capacity of said crank angle counter and the number of overflow signals counted by said overflow counting means at the time of generation of said timing signal, and to calculate the rotational speed of said engine on the basis of said corrected count value.

4,566,070
METHOD OF COUNTING PARTS

Kunifusa Tanaka, Kyoto, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 7, 1982, Ser. No. 415,751
Claims priority, application Japan, Sep. 7, 1981, 56-141346; Sep. 7, 1981, 56-141347; Sep. 7, 1981, 56-141348
Int. Cl.[4] G01G *19/04, 19/42*
U.S. Cl. 364—567 **33 Claims**

1. A method of counting articles, comprising the steps of:
(a) weighing articles contained in a plurality of hoppers to determine their weights;
(b) converting the weights into the numbers of articles contained in the hoppers by dividing each of the weights by a preset unit weight for the articles;
(c) computing the converted numbers of articles contained in the hoppers in combinations to derive the number of articles in each of the combinations;
(d) comparing the computed number of articles in each of the combinations with a preset request number to find a combination for which the number of articles is equal to or closest to the preset request number within a preset allowable range;
(e) generating a discharge signal to select hoppers out of the plurality of hoppers, in dependence upon the combination found in said step (d), to discharge the articles from the selected hoppers;
(f) deriving a new unit weight from at least one of the weights determined in said step (b) and the corresponding at least

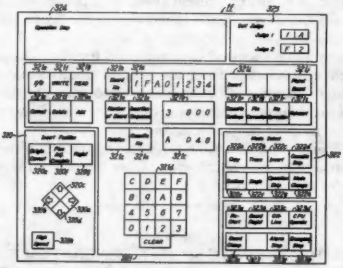


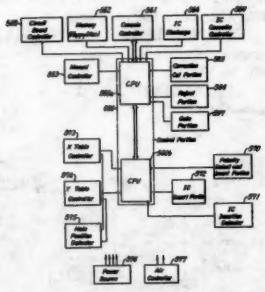
one of the numbers converted therefrom in said step (b) each time a predetermined number of counting operations, including said steps (a) through (e), are effected or after a predetermined length of time has elapsed; and
(g) renewing the preset unit weight with the new unit weight.

4,566,071
APPARATUS FOR AUTOMATICALLY INSERTING ELECTRONIC PARTS INTO PRINTED CIRCUIT BOARD

Hiroshi Takahashi, Mito, Japan, assignor to Ikegami Tsushinki Co. Ltd., Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,842
Claims priority, application Japan, Dec. 26, 1981, 56-210608
Int. Cl.[4] H05K *3/30*
U.S. Cl. 364—468 **30 Claims**





1. An apparatus for inserting automatically pins of electronic parts into holes formed in a printed circuit board at predetermined inserting positions comprising

means comprising a table movable in mutually orthogonal X and Y directions, while the printed circuit board is mounted on the table;

means for holding a number of cassettes, each of which contains a plurality of electronic parts of the same kind;

means for discharging selectively electronic parts one by one form given cassettes onto an inlet of an electronic part feeding path;

means provided in the electronic part feeding path for correcting the shape and posture of the pins of electronic parts and for cutting the tips of the pins into V-shape;

means provided at an outlet of the electronic part feeding path for gripping the pins of an electronic part and inserting the pins into holes formed at a given inserting position in the printed circuit board mounted on the table; and

means for controlling the table, parts discharging means, correcting and cutting means, and inserting means in such a manner that during a copy mode, position data of the respective inserting positions on the printed circuit board and electronic part data representing kinds of electronic parts to be inserted at respective inserting positions are stored in a memory, and during an insertion mode, the position data is successively read out of the memory to drive the table into such a position that the inserting position is aligned with an insertion axis of the inserting means and the electronic part data is read out of the memory to control the discharging means in such a manner that given electronic parts are successively discharged from given cassettes mounted on the cassette holding means.

4,566,072

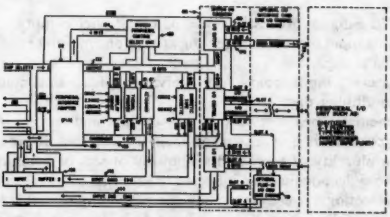
PROGRAMMABLE CALCULATOR INCLUDING MEANS FOR DIGITIZING THE POSITION OF AN X-Y PLOTTER PEN

Alan C. Mortensen; Bradley W. Miller; Franklin T. Hickenlooper; David C. Uhlrich; Marl D. Godfrey; Douglas M. Clifford; Rex L. James; Robert E. Watson, and John C. Keith, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 53,442, Jun. 29, 1979, Pat. No. 4,330,839, which is a division of Ser. No. 880,241, Feb. 22, 1978, abandoned, which is a division of Ser. No. 597,957, Jul. 21, 1975, Pat. No. 4,089,059. This application Mar. 8, 1982, Ser. No. 355,431

Int. Cl.⁴ G06F *3/13*

U.S. Cl. 364—520 **4 Claims**



1. An electronic calculator comprising:

keyboard input means for entering information into the calculator, said keyboard input means comprising a plurality of keys, including plotter control keys;

memory means for storing routines and subroutines of instructions to be executed by the calculator in performing selected functions and for storing information entered into the calculator from said keyboard input means;

processing means, coupled to said keyboard input means and said memory means, for selectively executing the routines and subroutines of instructions stored in said memory means and for processing selected information stored in said memory means;

output means, coupled to said processing means, for providing a visual indication of the results of performance of selected functions and of the processing of selected information by said processing means; and

X-Y plotter means, coupled to said processing means, said X-Y plotter means including a pen movable to any selected point on a flat plotter platen;

said processing means being responsive to actuation of at least one of said plotter control keys of said keyboard input means for selecting a digitizing mode of calculator operation and for initiating motion of the pen of said X-Y plotter means to a selected point on the plotter platen, said processing means thereafter being responsive to at least one of said plurality of keys of said keyboard input means for terminating the digitizing mode of calculator operation, for storing, in said memory means, an X coordinate and a Y coordinate of the selected point on the plotter platen to which the pen had previously been moved, and for causing said output means to visually indicate said stored X and Y coordinates to the user.

4,566,073

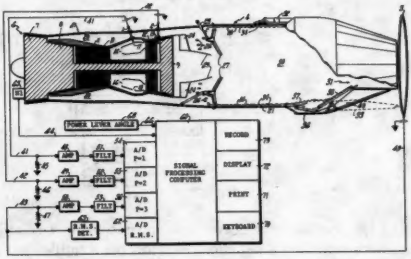
SOFT CATEGORY CLASSIFIER

Philip E. Zwicke, South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,120

Int. Cl.⁴ G06F *15/20*; G01M *15/00*

U.S. Cl. 364—551 **7 Claims**



1. Electronic signal processing apparatus for distinctly classifying different events occurring in an operating system, comprising:

transducer means disposed for response to a physical phenomenon in said system, for providing, when said transducer is disposed in an operating system, a signal having characteristics which differ in dependence upon operating conditions in said system;

an analog to digital converter connected for response to said transducer; and

digital signal processing means connected to said analog to digital converter

(a) for causing said analog to digital converter to sample the signal provided by said transducer in a manner to provide a record of digital signals indicative of the characteristics of the signal provided by said transducer,

(b) for providing a plurality of groups of classification signals, each of said groups identifying characteristics of a paradigm signal representative of a category which is correlated to a particular operating condition of said operating system, record of digital

(c) for providing, for each record of digital signals, a plurality of groups of measured signals, each group of measured signals indicative of the characteristics of the waveshape corresponding to characteristics of said paradigm signal,

(d) for providing a degrade increment signal in response to

deviations between said measured signals and corresponding ones of said classification signals,

(e) for providing a degradation signal as a summation of a plurality of said degrade increment signals, for each category, and

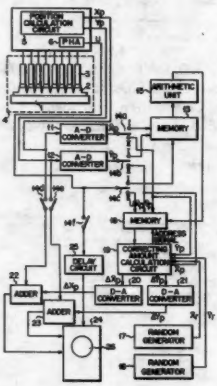
(f) for providing a category signal indicative of one of said categories to which said record of signals most nearly correlates in response to the degradation signals provided for all of said categories.

4,566,074

SCINTILLATION CAMERA

Mineki Nishikawa, Tochigi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1981, Ser. No. 309,845
Int. Cl.⁴ G01T 1/20
U.S. Cl. 364—571 **3 Claims**



1. A non-linearity correction apparatus for a scintillation camera including a radiation detector, the scintillation camera providing an analog position-coordinate signal defining a position of each of a plurality of image events and an energy signal representing an energy level corresponding to each such image event, the position signal being inaccurate as a result of a non-linear response of the radiation detector, the non-linearity correction apparatus comprising:

A/D converter means for converting the analog position-coordinate signal from the scintillation camera to an N-bit digital position-coordinate signal;

a correction amount memory for storing a plurality of correction values defining the non-linearity of the response of the radiation detector at a plurality of position points of its field of view;

means coupled to said A/D converter means, for establishing during calibration mode operation said correction values and storing them in said correction amount memory,

random data generator means for generating n-bit random data;

means for combining, during measuring mode operation, the n-bit random data from said random data generator means with the N-bit signal from said A/D converter means by adding the n-bit random data as lower order bits following the least significant bit of the N-bit A/D converter signal, thereby causing the resulting combined signal to be an N+n bit quanta;

a correction amount calculating circuit means for calculating based on said N+n bit quanta and correction values read from said correction amount memory, a digital correction amount applicable to said analog position coordinate signal for correcting the non-linear response of the radiation detector;

D/A converter means, coupled to said correction amount calculation circuit, for receiving said digital correction amount signals therefrom and providing analog correction amount signals indicative thereof; and

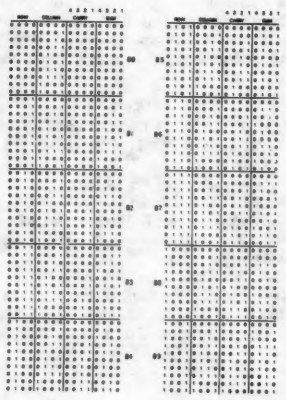
means for combining said analog correction amount signals with said analog position coordinate signals from said scintillation camera during measuring mode operation to provide non-linear corrected positional signals.

4,566,075

TABLE LOOKUP MULTIPLIER EMPLOYING COMPRESSED DATA READ ONLY MEMORY

Karl M. Guttag, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 21, 1982, Ser. No. 451,663
Int. Cl.⁴ G06F 7/52
U.S. Cl. 364—754 **9 Claims**



1. In a digital processing system, a multiplier comprising:

a first input means for receiving at least one multibit multiplicand digit;

a second input means for receiving at least one multibit multiplier digit;

a memory means connected to said first and second input means including an array of memory locations disposed in a plurality of rows and a plurality of sets of columns, a row decode means connected to said first input means for selecting a row of said array corresponding to said at least one multiplicand digit, a column decode means connected to said second input means for selecting a set of columns of said array corresponding to said at least one multiplier digit, said array having stored at memory locations of said selected row and said selected set of columns bits corresponding to the product digits of said at least one multiplicand digit and said at least one multiplier digit, said array having less than the total number of memory locations required to specify all bits of said product digits by deletion of any column of memory locations which would be "0" for all rows; and

an output means connected to said memory means to output the product digits from said memory means for said at least one multiplicand digit and said at least one multiplier digit input.

4,566,076
METHOD OF ATTENUATING A DIGITAL SIGNAL AND DEVICE FOR CARRYING OUT SAID METHOD

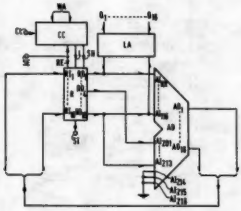
Antonie C. A. M. van der Steen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 337,645, Jan. 7, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 671,146

Claims priority, application Netherlands, Jan. 23, 1981, 8100307

Int. Cl.⁴ G06F *7/38*

U.S. Cl. 364—757 **12 Claims**



1. Apparatus for modifying a first binary word comprising a plurality of bits representing the value of a first analog signal to produce a second binary word having a plurality of bits representing the value of a second analog signal, said last mentioned value being in a predetermined ratio to the value of said first analog signal, comprising a colon a shift register having a plurality of parallel inputs and a plurality of parallel outputs; an adding device having a plurality of parallel first inputs, a plurality of parallel second inputs, and a plurality of parallel outputs, for adding a binary word applied to said first inputs to a binary word applied to said second inputs and presenting the result of the addition at its outputs; means for connecting each of said first inputs of said adding device to one of the outputs of the shift register in accordance with its binary weight and for connecting each of a plurality of the second inputs of said adding device to one of said shift register outputs; in such a way that said second inputs are shifted in the direction of the least significant bit relative to said first inputs of said adding device; and means for connecting the remaining second inputs of said adding device, for which no output of the shift register is available, to a point of constant logic level.

4,566,077
DEVICE FOR THE EXECUTION OF A SCALAR MULTIPLICATION OF VECTORS

Dieter Schuöcker, Vienna, Austria, and Ekkehard Klement, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,772

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1982, 3242818

Int. Cl.⁴ G06G *9/00, 7/16;* G06F *7/56*

U.S. Cl. 364—845 **11 Claims**

1. In a device for execution of a scalar multiplication of vectors, the improvement comprising:

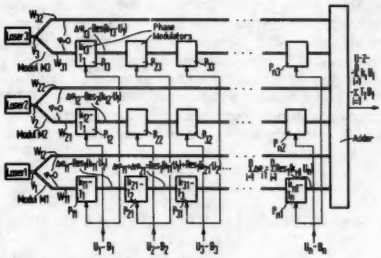
an interferometric adder means for residue numbers formed of a plurality of modules, and wherein a respective phase-modulatable light beam is provided for each module intended for residue representation, said light beam producing an interference pattern in an allocated reference surface in the module with a reference beam allocated to a respective phase-modulatable light beam;

an angle of incidence relative to the reference surface of a phase-modulatable light beam and of the corresponding reference beam, or a wavelength of the pair of associated light beams being selected such that a strip spacing of the interference pattern produced by said light beam pair in the allocated reference surface corresponds to the module allocated to this light beam pair;

a plurality of series-connected vector-component-controlled phase modulator means disposed in each of the phase-modulatable light beams;

one phase modulator means being provided for each component of a vector;

the phase modulator means producing a phase shift as a function of components of the vectors to be multiplied which are



supplied to it, said phase shift being proportional both to the components of the one as well as to the components of the other of the vectors to be multiplied; and

the phase shift produced by each component amounting to 2π when a numerical value of said component is divisible by the allocated module without remainder;

whereby a result of the scalar multiplication may be obtained as a positionally notated number from the interference pattern or interference patterns generated after radiation has passed through the phase modulator means.

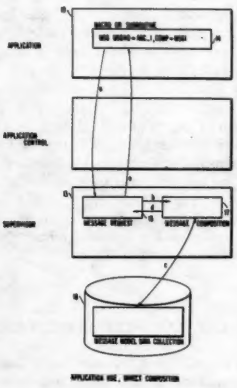
4,566,078
CONCURRENT MULTI-LINGUAL USE IN DATA PROCESSING SYSTEMS

Robert P. Crabtree, Colleyville, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,419

Int. Cl.⁴ G06F *3/00, 15/00*

U.S. Cl. 364—900 **12 Claims**



1. A method of providing a distributed, interactive data processing system with concurrent multi-lingual use by a plurality of users, said data processing system including a message composition service, said method comprising the steps of:

establishing a message model data collection by storing

message models, said message models being stored with a message identifier primary key that is common for all usage and a secondary key that is a national language index,

establishing for each user who signs onto said system a national language index corresponding to said secondary key,

requesting said message composition service to compose a message for use by an interactive program run on said system, said message being identified by said primary key for the specific message requested and said secondary key established for the user for which the message is intended,

retrieving from said message model data collection message models using said primary and secondary keys in response to a request to compose a message,

composing said message from said message models retrieved from said message model data collection, and

storing the composed message so that it can be used by said interactive program to communicate the message to the user.

4,566,079

CASSETTE-TYPE MAGNETIC-BUBBLE MEMORY APPARATUS

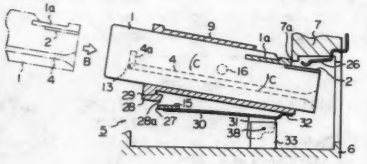
Hirosi Hasegawa, Suzaka; Tatsuro Onuma, Tokyo; Norio Matsubayashi, Nagano, and Masayoshi Tamura, Suzaka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 17, 1982, Ser. No. 450,792

Claims priority, application Japan, Dec. 18, 1981, 56-188693[U]

Int. Cl.⁴ G11C *19/08*

U.S. Cl. 365—1 **5 Claims**



1. A cassette-type magnetic-bubble memory apparatus comprising

a bubble cassette having contacts and which houses a bubble memory device and

a main apparatus which comprises a holder into which said cassette is inserted, said holder having contacts which contact said contacts of said cassette in cooperation with the action of inserting said cassette into said holder so that current may flow into said bubble memory device,

said main apparatus including a detecting means for detecting the action of inserting and withdrawing said cassette, and a circuit for controlling the current into said magnetic-bubble memory device via said contacts wherein the current begins to flow into said bubble memory device after said contacts of said cassette and said contacts of said holder are connected, and ceases to flow before said contacts of said cassette and said contacts of said holder are disconnected.

4,566,080

BYTE WIDE EEPROM WITH INDIVIDUAL WRITE CIRCUITS

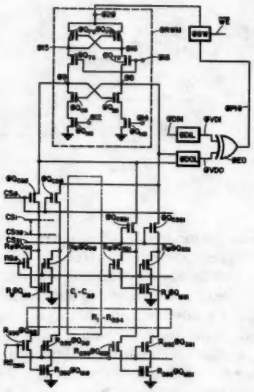
Sheng Fang, E. Palo Alto, and Kameswara K. Rao, Santa Clara, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 11, 1983, Ser. No. 512,853

Int. Cl.⁴ G11C *7/00, 11/40*

U.S. Cl. 365—185 **5 Claims**

1. A memory system of the EEPROM type including a plurality of sections of rows and columns of memory cells forming a plurality of bytes of memory, each section including a writing circuit, each row in each section including one memory cell for each column in the section, each section including the same number of rows and the same number of columns, each of the memory cells in the same row and column location in each section together comprising each byte of memory and selection means for each section selectively connecting each cell of a byte to its associated writing circuit simultaneously, each said writing circuit thereby being enabled to change information in its associated cell electrically from a first state to a second state or vice versa independent of the change another



writing circuit may be making electrically in the information stored in its associated cell, wherein each cell includes a floating gate field effect transistor (Q_M) and two conventional field effect transistors (Q_G, Q_D), each transistor including a source, a gate and drain, the source of one conventional transistor being connected to the gate of said floating gate transistor, the source of the other conventional transistor being connected to the drain of said floating gate field effect transistor, said gates of said conventional transistors being connected together and to said selection means, said selection means turning on both said conventional transistors to connect said floating gate transistor to its associated writing circuit.

4,566,081

SEMICONDUCTOR DEVICE WITH SPARE MEMORY CELLS

Kiyofumi Ochii, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 28, 1983, Ser. No. 461,951

Claims priority, application Japan, Jan. 29, 1982, 57-12781

Int. Cl.⁴ G11C *7/00*

U.S. Cl. 365—200 **14 Claims**

1. A semiconductor memory device responsive to a plurality of column select signals comprising:

a plurality of bit memory sections each including a plurality of memory cells arranged in a plurality of columns;

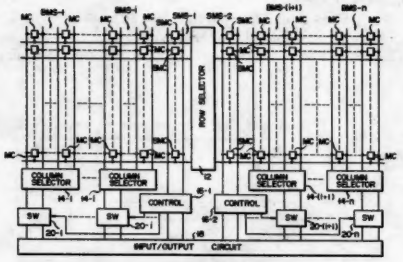
a plurality of column select circuits coupled to said columns of memory cells in each of said bit memory sections for selecting said columns;

a plurality of first switching means coupled to said column select circuits for selectively energizing said column select circuits;

a spare memory section containing a column of spare memory cells;

second switching means coupled to said spare memory section; and

control means coupled to said first and second switching means for turning off one of said first switching means and



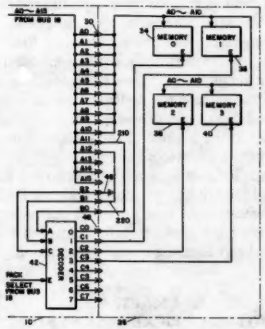
for turning on said second switching means in response to one of said column select signals.

4,566,082

MEMORY PACK ADDRESSING SYSTEM

Russell Y. Anderson, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 23, 1983, Ser. No. 478,181
Int. Cl.⁴ G11C *8/00*
U.S. Cl. 365—230 **3 Claims**



1. An expandable memory pack addressing system for a microprocessor system, comprising:

an address bus provided within said microprocessor system, said address bus having a plurality of parallel-bit address lines coupled to respective first contacts of a memory pack connector;

memory selection means provided within said microprocessor system, said memory selection means having a plurality of input lines coupled to respective second contacts of said memory pack connector and a plurality of memory select output lines coupled to respective third contacts of said memory pack connector; and

memory pack means connectable to said memory pack connector, said memory pack means comprising a plurality of selectable memories, a plurality of address lines connected to said memories, a plurality of memory selection lines connected to said memories, and a plurality of feedback signal lines,

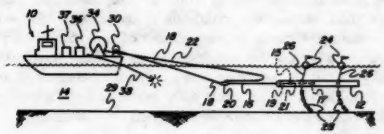
wherein said address lines are connectable to some, but not all, of said first contacts of said memory pack connector, said feedback signal lines are connectable between predetermined said first contacts and second contacts of said memory pack connector, and said memory selection lines are connectable to said third contacts of said memory pack connector.

4,566,083

SEISMIC TIMING CONTROL SYSTEM

Ben B. Thigpen, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Jun. 3, 1983, Ser. No. 500,922
Int. Cl.⁴ G01V *1/38*
U.S. Cl. 367—21 **3 Claims**



1. In an intermittent-tow seismic exploration operation wherein a seismic detector cable is towed in a body of water behind a ship and is manipulated in a timed sequence of events during a recording episode, a method for initiating a recording cycle, comprising the steps of:

continuously measuring and displaying the RMS cable-noise level during a recording episode;

establishing a desired steady-state cable-noise quiet-window said recording episode;

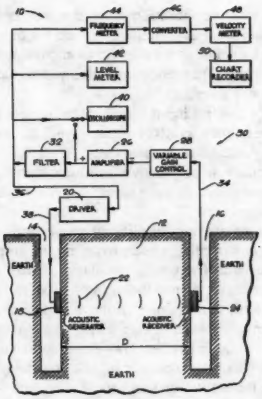
positioning the start of a recording cycle with respect to said quiet window to optimize the acoustic signal-to-noise ratio during a useful maximal-length recording cycle within the time frame of a minimal-length recording episode.

4,566,084

ACOUSTIC VELOCITY MEASUREMENTS IN MATERIALS USING A REGENERATIVE METHOD

Edwin F. Laine, Alamo, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,920
Int. Cl.⁴ G01V *1/28*
U.S. Cl. 367—49 **19 Claims**



19. A method for measuring stress in the material of a volume of earth between first and second boreholes, including the steps of:

generating acoustic energy in the form of sinusoidal shear

waves in the first borehole by means of a generator that converts electrical energy to acoustic energy, said acoustic energy being directed toward the second borehole;

receiving the acoustic energy in the second borehole and converting the received energy into electrical signals;

amplifying the electrical signals for transmission to the generator;

said steps of generating, receiving said amplifying being performed inclusively in a closed loop that also includes the material.

said amplification having sufficient regenerative gain to produce sustained oscillations in the closed loop which indicate the stress of the material of the volume of earth through which the acoustic energy is being transmitted,

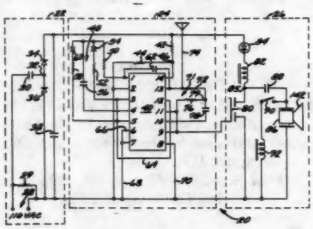
said generating, receiving and amplifying being done in the closed loop, the inherent noise in the closed loop providing initial signals to build sustained oscillations.

4,566,085

HIGH INTENSITY ULTRASONIC GENERATOR

Stanley Weinberg, Los Angeles, Calif., assignor to Wein Products, Inc., Los Angeles, Calif.

Filed Jan. 19, 1982, Ser. No. 340,598
Int. Cl.[4] H04B *1/02*; G08B *3/10*
U.S. Cl. 367—139 **13 Claims**



1. An ultrasonic vibration generator comprising:

a variable frequency oscillator means for producing an oscillating signal at a variable ultrasonic frequency, responsive to a varying frequency control input signal to the variable frequency oscillator;

frequency control input signal means for providing the varying frequency control input signal to the variable frequency oscillator means;

speaker means, responsive to the output of the variable frequency oscillator means, for producing mechanical vibrations; and

amplifier means for amplifying the output of the variable frequency oscillator and providing the amplified output of the variable frequency oscillator to the speaker means, said amplifier means including a VMOS field effect transistor having a drain; a choke; a capacitor, the choke and the capacitor each having a first terminal connected to the drain of said field effect transistor; and an inductive load in parallel with the speaker means, the parallel combination of the inductive load and speaker means being connected to a second terminal of said capacitor;

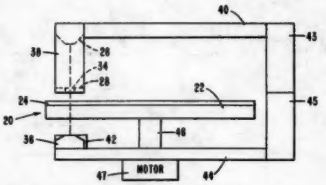
the inductive load and the speaker means having respective inductive and capacitive values which provide resonance between the inductive load and the speaker means at a selected output frequency of the variable frequency oscillator means.

4,566,086

INFORMATION STORAGE SYSTEM UTILIZING ELECTRETS

Jeff L. Anderson, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 13, 1983, Ser. No. 503,447
Int. Cl.[4] G11B *11/08*
U.S. Cl. 369—13 **11 Claims**



1. A system for storing and reading coded information comprising:

a rotating substrate having coated on one side a layer of dielectric material for the type in which electrets may be induced;

a source of radiant energy located adjacent the layer of dielectric material and operated at a first intensity level which increases the temperature of the dielectric material on which the radiant energy is projected to an electret-forming condition;

an electrical field generator means positioned between the layer of dielectric material and the source of radiant energy for generating a coplanar electrical field within said layer, said generator means including an aperture aligned with said radiant energy source for enabling the radiant energy source to heat the dielectric material adjacent the aperture and thereby form an electret extending in a direction parallel to the surface of the dielectric material upon operation of the generator means;

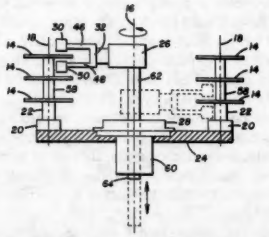
and first means located adjacent said substrate slidably supporting said radiant energy source and said field generator means for movement in a direction across the substrate enabling a plurality of electrets to be formed in said dielectric material representing coded information.

4,566,087

DIGITAL OPTICAL DISK SYSTEM

Crispin S. Kraft, Mill Valley, Calif., assignor to Casdade Systems Incorporated, Mill Valley, Calif.

Filed May 22, 1984, Ser. No. 613,082
Int. Cl.[4] G11B *17/22, 17/30*
U.S. Cl. 369—34 **18 Claims**



1. A memory disk system adapted for receiving a plurality of data disks, each of said disks having an obverse face, a reverse face, and a plurality of tracks on at least one said faces said memory disk system comprising:

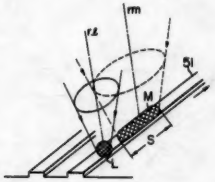
means for rotatably mounting said plurality of disks radially from a main axis, the rotation axis of each of said disks being radially disposed equidistantly from and parallel to said main axis;
means for rotating each of said disks about its axis;
an arm rotatably mounted about said main axis and extending radially therefrom;
means for positioning said arm adjacent a selected one of said disks;
a transducer head carried on a distal end of said arm; and
means for operatively positioning said transducer head adjacent a selected one of said tracks on said one of said disks.

4,566,088

OPTICAL AND REVERSIBLE RECORDING AND REPRODUCING APPARATUS

Tomio Yoshida, Katano; Isao Satoh, Neyagawa; Shunji Ohara, Higashiosaka; Kenji Koishi, Hyogo, and Yuzuru Kuroki, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 12, 1983, Ser. No. 542,014
Claims priority, application Japan, Oct. 14, 1982, 57-179086
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—44 **5 Claims**



1. An apparatus for optically and reversibly recording and reproducing signals by applying micro-lightspots on an optical recording medium which uses a thin recording film made of optical recording material which can reversibly change its optical characteristic between its amorphous state and its crystal state as a result of light being irradiated on said thin film, said film being formed on a substrate having optical guide tracks, said apparatus comprising:
two light source means for respectively applying light beams having different wavelengths; and
optical means for respectively converging the applied light beams so as to obtain a first substantially circular microlightspot and a second elliptic lightspot having a major diameter in the tangential direction of said optical guide track on one and the same optical guide track, the condition for temperature elevation and rapid cooling being provided for said optical recording medium by said first almost circular lightspot, and the condition for temperature elevation and slow-cooling being provided for said optical recording medium by said second elliptic light spot solely or by cooperation of said second elliptic light spot and said first almost circular light spot.

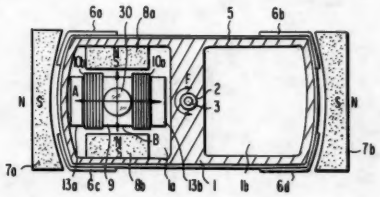
4,566,089

DEVIATION CORRECTION APPARATUS FOR OPTICAL DISC LIGHT BEAMS

Kenjiro Kime, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 589,914
Claims priority, application Japan, Mar. 30, 1983, 58-57378; Jun. 6, 1983, 58-100421
Int. Cl.[4] G11B *7/08*
U.S. Cl. 369—45 **15 Claims**

1. A driving apparatus for controlling and tracing light beams of an optical disc player or recorder, comprising:
(a) a base member (4),
(b) a first holder member (1) slidably and rotatably disposed on a shaft (3) upstanding from said base member,
(c) optical means (30) for focusing a light beam (11) irradiated thereon and emitting said light beam as a light spot (12),
(d) a second holder member (9) mounting said optical means,
(e) means (13*a*, 13*b*) for flexibly mounting said second holder member to said first holder member for movement towards and away from said shaft in a direction perpendicular thereto,



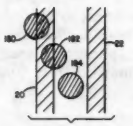
(f) rotation driving means (6*a*–6*d*, 7*a*, 7*b*) for rotating said first holder member and optical means about said shaft to correct tracking deviations of said light spot transverse to an information track on a storage disc,
(g) thrust driving means (5, 7*a*, 7*b*) for sliding said first holder member and optical means on said shaft to correct focus deviations of said light spot with respect to said information track, and
(h) parallel driving means (10*a*,10*b*, 8*a*, 8*b*) for moving said second holder member and optical means perpendicular to said shaft to correct time axis or jitter deviations of said light spot.

4,566,090

STORAGE MEDIUM TRACK PITCH DETECTOR

Carlyle J. Eberly, Long Beach, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 329,462, Dec. 10, 1981, Pat. No. 4,504,939.
This application Jul. 30, 1984, Ser. No. 635,955
Int. Cl.[4] G11B *3/82, 3/90*
U.S. Cl. 369—46 **8 Claims**



1. Apparatus for measuring a condition of excessively close spacing between adjacent tracks on an information recording medium comprising:
light means for projecting a spot of light onto a recording medium at a predetermined location thereon intermediate a first and a second track;
photodetector means for providing an electrical signal representative of the amount of light from said spot reflected off of the medium in a predetermined direction;
tracking means for maintaining a substantially constant lateral spacing of said spot of light from said first track; and
scanning means for providing relative motion between said

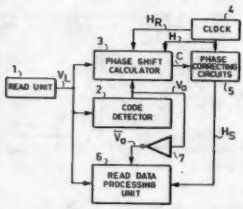
spot of light and said medium in a direction parallel to said first track.

4,566,091

PROCESS AND DEVICE FOR REGENERATING THE PHASE OF SYNCHRONIZING SIGNALS IN A DATA CARRIER OPTICAL WRITE-READ APPARATUS

Jean-Louis Gerard, and Marc Loret, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 9, 1983, Ser. No. 473,809
Claims priority, application France, Mar. 12, 1982, 82 04220
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—47 **31 Claims**



1. A data carrier having on a reference surface a plurality of adjacent track elements for digital data storage in alloted non-contiguous portions of said track elements, said data carrier comprising:

flag means repeatedly arranged along each one of said track elements and intermediate said non-contiguous portions for producing specific synchronizing signals in response to the lengthwise scanning thereof with an illuminating spot;

each of said flag means comprising a pair of spaced synchronizing marks succeeding one another in the direction of scanning;

each one of said marks having in the scanning direction a front edge and a rear edge defining a mark length substantially equal to half an odd multiple of a predetermined unit length;

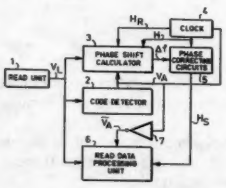
the distance in each of said flag means from the front edge of the first scanned mark to the rear edge of the last scanned mark being a multiple of said predetermined unit length.

4,566,092

PROCESS AND DEVICE FOR GENERATING SYNCHRONIZING SIGNALS IN AN OPTICAL DATA CARRIER WRITE-READ APPARATUS

Jean-Louis Gérard; Claude Lehureau, and Marc Loret, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 9, 1983, Ser. No. 473,568
Claims priority, application France, Mar. 12, 1982, 82 04219
Int. Cl.[4] G11B *7/00, 27/00*
U.S. Cl. 369—59 **11 Claims**



1. A synchronizing signal generating process for use in a optical system performing the optical scanning of a reference surface of a data carrier with an illuminating spot, said system having clock means, means for causing said spot to scan any one of a plurality of track elements arranged on said reference surface, and optoelectronic detection means for sensing radiation modified by the optical interaction of said spot with synchronizing flag means repeatedly arranged along each one of said track elements, each of said flag means comprising at least one recorded synchronizing mark having in the direction of scanning a front edge and a rear edge, said process comprising the steps of:

extracting from a pulsed electric signal supplied by said optoelectronic detection means a trailing edge corresponding to the scanning by said spot of said rear edge, said extracting being controlled by a leading edge corresponding to the scanning by said spot of said front edge;

determining with reference to a time scale provided by said clock means a time value representative of the occurrence of said trailing edge; and

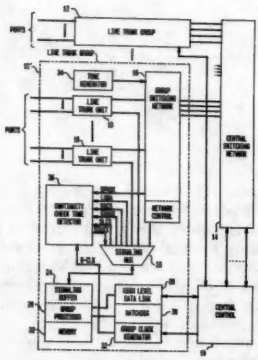
deriving from said time scale a further time scale resynchronized under the control of said time value.

4,566,093

CONTINUITY CHECK TONE DETECTOR FOR USE WITH A DIGITAL TELECOMMUNICATION SYSTEM

Felix V. Diaz, Boca Raton, Fla., assignor to Siemens Corporate Res. & Support, Inc., Iselin, N.J.

Filed Apr. 23, 1984, Ser. No. 602,794
Int. Cl.[4] H04J *1/16, 3/14*
U.S. Cl. 370—14 **23 Claims**



1. A continuity check tone detector for use with a pulse code modulated time division telecommunication system adapted to be connected to a plurality of transmission lines and including interface units for connecting respective groups of transmission lines to said telecommunication system, a digital tone generator for providing call processing tones, a switching network and a switch control unit for supervision of line connection, line release, and test operations, and including a clock generator, said continuity check tone detector being designed for detecting continuous tones transmitted across temporarily established transmission paths and comprising:

detector interface means, connected to said switching network, for receiving serial tone information and for deriving digitally encoded tone samples therefrom, said detector interface means, being further connected to said switch control unit, for receiving serial control information and converting the same into detector timing and control signals;

a digital signal processor connected to receive said detector timing and control signals and said tone samples and including means for converting each tone sample into a linearized tone sample, means for digitally filtering the linearized tone sample and means for measuring the tone level of said filtered tone sample and for generating output data representing the measured tone level; and

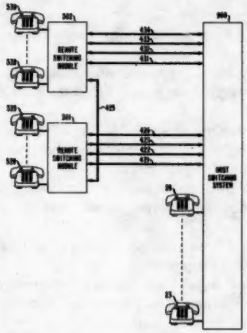
a control processor connected to receive said output data from said digital signal processor and said detector timing and control signals and including means for evaluating a measured tone level with respect to programmed level and predetermined duration in order to determine the presence of a continuous tone, and means for generating a corresponding test message to said switch control unit.

4,566,094

CHANNEL SELECTION IN A SWITCHING SYSTEM HAVING CLUSTERED REMOTE SWITCHING MODULES

Menachem T. Ardon, Naperville; James C. Kennedy, St. Charles; Douglas S. Sand, Naperville; Lawrence J. Trimnell, Wheaton, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 11, 1983, Ser. No. 493,741
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—58 15 Claims



1. An arrangement comprising

host switching means,

first and second remote switching means,

first interconnection means for interconnecting said host switching means and said first remote switching means,

second interconnection means for interconnecting said host switching means and said second remote switching means and

third interconnection means comprising a plurality of communications channels for interconnecting said first and second remote switching means, said third interconnection means being separate and distinct from said first and second interconnection means,

wherein said first remote switching means comprises means for transmitting and receiving data words representing subscriber-generated information in ones of said communication channels, selection means for selecting ones of said communications channels, means responsive to a first selection by said selection means of any first given one of said communications channels for transmitting in a predetermined one of said communications channels, control information defining said any first given channel out of said plurality of communicating channels and means responsive to said first selection by said selection means for transmitting and receiving control information in said any first given channel and

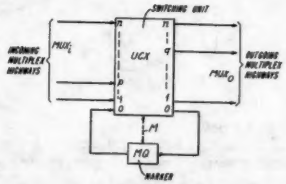
wherein said second remote switching means comprises means for transmitting and receiving data words representing subscriber-generated information in ones of said communications channels, means for receiving in said predetermined one of said communications channels, said control information defining said any first given channel out of said plurality of communications channels and means responsive to said control information defining said any first given channel out of said plurality of communications channels for transmitting and receiving control information in said any first given channel.

4,566,095

TIME DIVISION MULTIPLEX SWITCHING NETWORK PERMITTING COMMUNICATIONS BETWEEN ONE OR SEVERAL CALLING PARTIES AND ONE OR SEVERAL CALLED PARTIES

Michel Devault, 22, rue de Bourgogne, 22300 Lannion; Bernard Gérard, 24, Cite des Lauriers, Ker-Maria-Sulard, 22450 La Roche-Derrien, and Yvon Rouaud, Les Fontaines, A33, 22300 Lannion, all of France

Filed Dec. 28, 1983, Ser. No. 566,433
Claims priority, application France, Dec. 30, 1982, 82 22122
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—60 2 Claims



1. Asynchronous time division multiplex switching network for switching multi-service communication data, said network being intended to perform point-to-point data switching, data switching between a single calling party and a plurality of called parties and data switching between a plurality of calling parties and a single called party, said network comprising:

a plurality of incoming time division multiplex highways including asynchronous channels each formed by a packet of data and an address label (j) and a plurality of outgoing time division multiplex highways including asynchronous channels each formed by a packet of data and an address label (k);

incoming and outgoing terminal switching equipments respectively connected to said incoming and outgoing multiplex highways;

a bus interconnecting said incoming and outgoing terminal switching equipments;

means for converting the label (j) of an incoming asynchronous channel into an identification word which is decoded in the outgoing terminal switching equipments and is composed of three sub-words, the first sub-word being a sub-word characterizing the switching as being selected from

(a) point-to-point communication switching;

(b) communication switching from one called party to several called parties; and

(c) communication switching from several calling parties to one called party;

the second sub-word selectively designating the number of an outgoing multiplex highway or not having any significance with regard to the selected type of communication switching, and the third sub-word being a sub-word characterizing the number (k) of an outgoing asynchronous channel or the numbers (α) of several outgoing asynchronous channels in the case of one calling party to several called parties communication switching; and

means for controlling the acceptation of the packets by the outgoing terminal switching equipments in response to the values of the three sub-words.

4,566,096

TELEPHONE EXCHANGE CONFERENCE CIRCUIT

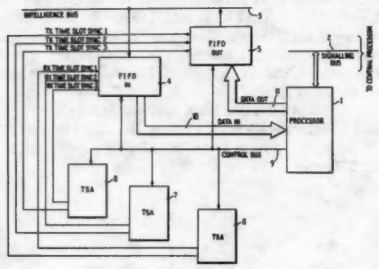
Gary A. Sarson, Ottawa, Canada, and Michael P. McKenzie, Enfield, England, assignors to Standard Telephones and Cables, Public Limited Company, London, England

Filed Oct. 6, 1983, Ser. No. 538,412

Claims priority, application United Kingdom, Oct. 8, 1982, 8228844

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—62 5 Claims



1. A telephone exchange conference circuit, for setting up a conference call including n exchange terminations corresponding to n conferees, where n is an integer greater than 2, in a PCM-TDM telephone exchange, comprising:

an input store for the reception of n PCM code bytes from the conferees;

an output store from which n PCM code bytes can be sent to the conferees;

a processor which controls the operations of the conference circuit;

an input to the processor over which the identities of 2 n TDM time slots to be used for the connection are received when the circuit is in use, there being separate 'talk' and 'listen' time slots allocated to each of the conferees, which 2 n time slots do not need to occur consecutively in a cycle;

connections from the processor to the stores via which the input store is set to its condition for the reception of bytes from the n conferees and to the output store via which said output store is set to is condition for sending bytes to the n conferees; and

connections from the stores via which bytes are transferred from the input store to the processor and from the processor to the output store;

wherein the bytes which enter the input store are received from a telephone exchange bus also used for nonconference calls and the bytes which leave the output store go to said same telephone exchange bus;

wherein on reception of n bytes from the input store the processor compares these bytes and selects the one which represents the largest speech amplitude;

wherein the processor, after having made said selection, sends the selected byte to the output store for the time slots for the (n−1) conferees other than the one from which it came;

wherein the processor sends a silent code byte to the output store for the time slot for the selected conferee; and

wherein the n PCM bytes thus sent to the output store are sent each at the appropriate one of said time slots to the respective ones of the conferees;

whereby the conferee whose byte is selected as representing the largest speech amplitude receives said silent code byte while the other conferees receive the byte from the selected conferee.

4,566,097

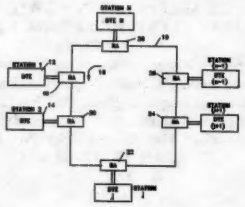
TOKEN RING WITH SECONDARY TRANSMIT OPPORTUNITIES

Seymour Bederman, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 23, 1983, Ser. No. 565,244

Int. Cl.[4] H04J *3/16, 3/00*

U.S. Cl. 370—89 12 Claims



1. A method for operating stations on a ring network comprising the steps of:

(a) monitoring an input terminal at each of said stations to detect a first predetermined bit pattern on the ring network;

(b) inserting, from one of the stations, message characters onto the ring network in place of a portion of said first predetermined bit pattern;

(c) monitoring the input at said one station to detect a second predetermined bit pattern from any station other than said one station;

(d) buffering at said one station a portion of the second predetermined bit pattern;

(e) determining a relative priority between the received second predetermined bit pattern and the message characters being transmitted; and

(f) aborting transmission of the message character and forwarding the second predetermined bit pattern only if the relative priority has a predetermined relationship.

4,566,098

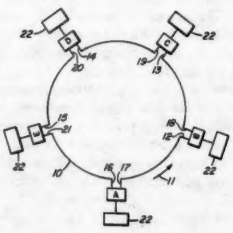
CONTROL MECHANISM FOR A RING COMMUNICATION SYSTEM

Neil D. Gammage, Kanata; Jan K. Pachl, and Liam M. Casey, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 14, 1984, Ser. No. 609,691

Int. Cl.[4] H04J *3/16*

U.S. Cl. 370—89 12 Claims



1. A communication system comprising, a plurality of stations each having an input port for receiving data and an output port for transmitting data, and a transmission medium for interconnecting said stations in a ring, each of the stations comprising means for determining the busy/idle status of the ring, one of said stations comprising means for generating

clock and framing signals, each frame of data on the ring being preceded by a toggle signal having one or another value, the determining means being responsive to the values of the toggle signal in two consecutive frames for determining the busy/idle status of the ring whereby a station recognizes the ring as being idle only if the present value of the toggle signal is the same as the value of the toggle signal in the previous frame, and a station recognizes the ring as being busy only if the present value of the toggle signal is different from the value of the toggle signal in the previous frame.

4,566,099
SYNCHRONOUS CLOCK GENERATOR FOR DIGITAL SIGNAL MULTIPLEX DEVICES

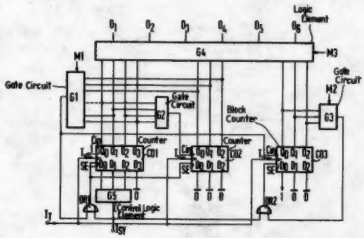
Johann Magerl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,329

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1982, 3226201

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 370—100 **9 Claims**



1. A synchronous clock generator for digital signal multiplex devices comprising a first counter whose counting period corresponds to a block length of a pulse frame and which can be set into a prescribed counter reading, a block counter controlled by the first counter, and a logic element for generating working clock signals which logic element is connected to the outputs of the counters, characterized in that change-over means are provided for changing the counting period of at least one of the first counter and the block counter to adapt such counting period selectively to a plurality of respective different multiplexers; and in that the logic element gates out the working clock signals for such respective different multiplexers according to the condition of said changeover means.

4,566,100
BIT ERROR RATE MEASURING SYSTEM

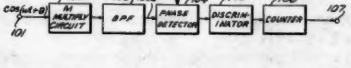
Toshio Mizuno, Tanashi; Gunkichi Satoh, Yokohama, and Michihisa Ohkawa, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1983, Ser. No. 486,319

Claims priority, application Japan, Apr. 20, 1982, 57-64666

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—5 **15 Claims**



1. A system for equivalently measuring bit error rate of received M-phase digital phase-modulated waves by steps comprising multiplying a frequency of an M-phase digital phase-modulated wave by M, wherein M is a positive integer, phase-detecting the M-multiplied signal directly or after frequency conversion by using a reference carrier which is orthogonal to a boundary of an error region in a phasor diagram, detecting errors by comparing the phase detection output with a given threshold which is determined so as to correspond to said boundary of the error region, and counting the number of pulses which represent errors.

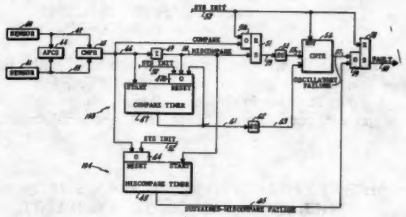
4,566,101
OSCILLATORY FAILURE MONITOR

Joseph P. Skonieczny, Madison; Richard D. Murphy, and Douglas H. Clelford, both of Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1983, Ser. No. 470,370

Int. Cl.⁴ G06F *11/30*

U.S. Cl. 371—5 **1 Claim**



1. An oscillatory-failure monitor that comprises:

means **(40, 41)** for providing a plurality of signals,

comparator means **(45)** for providing a compare signal **(46)** when a parameter of each signal of the plurality of signals is in agreement, within a tolerance, with the parameter of each of the other signals of the plurality of signals, in response to the plurality of signals;

timer means **(47)** for providing a decrement signal in response to the sustained provision of the compare signal for a threshold interval of time;

means **(45, 49)** for providing a discrete miscompare signal **(55)** upon each discrete occurance of at least a single disparity, without the tolerance, among the signal parameters, in response to the plurality of signals;

counter means **(56)** for providing a count signal that increments in value in response to each discrete miscompare signal and that decrements in value in response to each provision of the decrement signal;

means **(58)** for providing a fault indication in response to the count signal having incremented to a threshold value.

4,566,102
PARALLEL-SHIFT ERROR RECONFIGURATION

James L. Hefner, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,816

Int. Cl.⁴ G11C *29/00*

U.S. Cl. 371—11 **11 Claims**

1. A method for reconfiguring a parallel configuration of identical functional units in response to a failure of one of said units, said configuration comprising a rightmost unit serving as a spare, at least two input busses coupled to each of said units except for a leftmost and said rightmost units, and at least two output busses coupled to each of said units except for said leftmost and rightmost units, each of said input and output busses suitably coupled to at least two functional units, the method comprising the steps of:

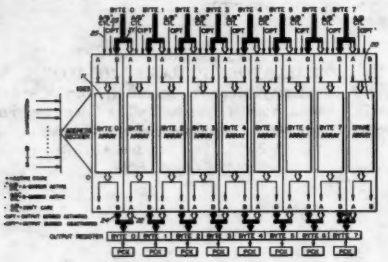
shifting the contents of the failed unit and the contents of all the units to the right of said failed unit one unit to the right;

deactivating the outputs associated with said failed unit;

activating the rightmost input bus associated with each unit for all of the units to the left of said failed unit;

activating the leftmost input bus associated with each unit for all the units to the right of said failed unit;

activating the rightmost output bus associated with each unit for all of the units to the left of said failed unit and



activating the leftmost output bus associated with each unit for all of the units to the right of said failed unit;

whereby said failed unit is operationally eliminated from said parallel configuration of identical functional units.

4,566,103

METHOD FOR RECOVERING FROM ERROR IN A MICROPROGRAM-CONTROLLED UNIT

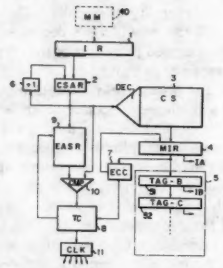
Kiyosumi Sato, Kawasaki, and Kazuyuki Shimizu, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 20, 1983, Ser. No. 534,134

Claims priority, application Japan, Sep. 28, 1982, 57-168912

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—12 **10 Claims**



1. A method for recovering from an error in a microprogram-controlled unit, the microprogram-controlled unit comprising a control storage for storing microinstructions, a control storage address register for storing an address specifying one of the microinstructions, a microinstruction register for storing a specified microinstruction, serially connected registers (tags) in stages following the microinstruction register for storing microinstructions during processing, an error detection and correction circuit for performing a validity check on the specified microinstruction stored in the microinstruction register and correcting erroneous microinstructions, an error address storage for storing the address of the specified microinstruction when an error is detected, and a comparator for comparing the addresses in the control storage address register and the error address storage, the validity check by the error detection and correction circuit for each of the microinstructions being carried out in parallel with the processing of each of the microinstructions, said method comprising the steps of:

(a) detecting an erroneous microinstruction when the specified microinstruction contains an error;

(b) performing a retry operation for related microinstructions, including the erroneous microinstruction, in an interlock mode in which the erroneous microinstruction and the related microinstructions preceding the erroneous microinstruction are successively subjected to error detection and correction, followed by reexecution;

(c) recording an address specifying the erroneous microinstruction in the error address storage;

(d) determining whether the address for the erroneous microinstruction is again stored in the control storage address register; and

(e) performing an operation in the interlock mode for the erroneous microinstruction only, when the address for the erroneous microinstruction is again stored in the control storage address register.

4,566,104

TESTING DIGITAL ELECTRONIC CIRCUITS

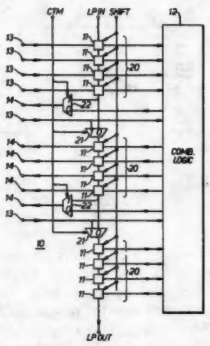
George M. Bradshaw, Stockport; Peter L. L. Desyllas, and Keith McLaren, both of Wilmslow, all of England, assignors to International Computers Limited, London, England

Filed Oct. 26, 1983, Ser. No. 545,520

Claims priority, application United Kingdom, Nov. 20, 1982, 8233179

Int. Cl.⁴ G01R *31/28*

U.S. Cl. 371—15 **4 Claims**



1. A digital electronic circuit comprising:

(a) a plurality of data storage elements having respective inputs and outputs,

(b) a combinational logic network having a plurality of inputs and outputs,

(c) first connection means connecting the outputs of at least some of the data storage elements to respective inputs of the combinational logic network and connecting at least some of the outputs of the combinational logic network to respective inputs of the data storage elements,

(d) a plurality of input and output terminals,

(e) second connection means connecting all the data storage elements together in series by way of their inputs and outputs, between a pair of said input and output terminals, thereby forming a serial shift path,

(f) a control line for receiving a shift control signal, the control line being connected to all the data storage elements for enabling each of the data storage elements to receive data from said serial shift path,

(g) at least one first multiplexer connected in said serial shift path and having

(i) a first input connected to the output of one of said data storage circuits,

(ii) a second input connected to one of the said input terminals, and

(iii) an output connected to the input of another one of said data storage circuits,

(h) at least one second multiplexer having

(i) a first input connected to one of said outputs of the combinational logic network

(ii) a second input connected to the output of one of said data storage elements, and

(iii) an output connected to one of the said output terminals, and

(j) a further control line for receiving a test mode control signal, the further control line being connected to all said first and second multiplexers for switching each said multiplexer to select its first input when the test mode control signal has one value and otherwise to select its second input.

4,566,105
CODING, DETECTING OR CORRECTING TRANSMISSION ERROR SYSTEM

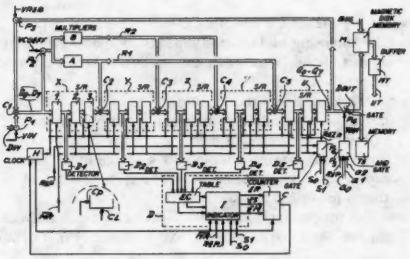
André Oisel, Elancourt; Abdelhamid Boulenouar, Les Ulis, and Denise Le Gleau, Paris, all of France, assignors to Cii Honeywell Bull (Societe Anonyme), Paris, France

Filed Sep. 13, 1983, Ser. No. 531,680

Claims priority, application France, Sep. 13, 1982, 82 15403

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—37 **29 Claims**



1. A system for coding, detecting or correcting transmission errors in an interleaved Reed-Solomon cyclically coded binary message, formed of at least one useful sub-block of symbols each having the same number Dn of data bits, the number of sub-blocks corresponding to an interleaving depth of the code, the code being represented by a polynominal $G(x)=Ax^n+Bx^{n-1}+\ldots Nx+1$, said coding system comprising several cascaded connected shift register assemblies 1, 2 . . . n having parallel input and output bits, each assembly having a number of cascaded shift registers equal to the interleaving depth, k, of the code, whereby there are n·k of said registers arranged as registers 1, 2, . . . (n·k−1) and n·k, means for shifting the bits in register P to register P+1, where P is selectively each of registers 1, 2, . . . (n·k−1), means for initially sequentially loading into register 1 (1) data symbols of a message to be encoded as modified by a control checkword formed of symbols obtained by concatenation with the useful message symbols or (2) data symbols of a coded message containing a checkword and which may include errors, a first EXCLUSIVE OR adder having output bits respectively coupled to inputs of register 1, the first adder having a first set of inputs respectively responsive to outputs of register n·k and a second set of inputs responsive to the message data symbols, intermediate EXCLUSIVE OR adders, each having a first set of inputs and a set of outputs respectively responsive to the outputs of register j and supplying signals to inputs of register (j+1), where j is selectively every kth one of P, the intermediate adders including a second set of inputs respectively connected by circuit means to be responsive to the same bits as applied to the inputs of register 1, the circuit means respectively including matrix means for deriving the coefficients of the polynomial G(x) of the cyclic code of the message, said coefficients being obtained from primitive elements of a predetermined Galois group and being stored in the matrix means; the matrix means modifying the second inputs of the intermediate adders by binary values representing the coefficients of the polynomial G(x).

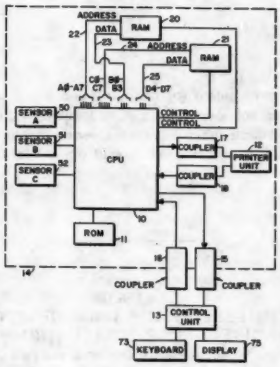
4,566,106
ELECTRONIC POSTAGE METER HAVING REDUNDANT MEMORY

Frank T. Check, Jr., Orange, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 343,877, Jan. 29, 1982, abandoned. This application Apr. 15, 1985, Ser. No. 723,001

Int. Cl.⁴ G06F *11/30*

U.S. Cl. 371—67 **8 Claims**



1. In an electronic postage meter having a microprocessor, memory means coupled to said microprocessor for storing postage accounting data and operational condition data, and a plurality of sensors for detecting operation conditions in said postage meter, the improvement wherein said microprocessor comprises means for checking said sensors periodically on a time-shared basis, said time sharing including at least verification of said stored accounting data, said checking being effected between successive operations of said meter by said microprocessor, said meter operation being in response to external operational inputs, comparing data, said microprocessor presenting in said means for comparing a unique pattern of said stored operational condition data for comparison with a pattern of actual operational condition data from said sensors, and means response to an absence of said unique pattern in the outputs of said sensors for indicating an error condition.

4,566,107
LASER APPARATUS

Tomimaro Kitaura; Yutaka Ohashi, and Masami Yoneda, all of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Aug. 11, 1983, Ser. No. 522,355

Claims priority, application Japan, Aug. 13, 1982, 57-139853

Int. Cl.⁴ H01S *3/00*

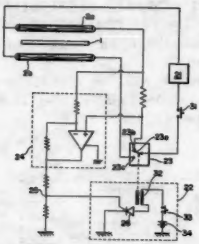
U.S. Cl. 372—38 **8 Claims**

1. In a laser apparatus including a reflector with a reflective inner surface which defines an elliptical cavity and along a focal line of the ellipse formed by which a laser medium and a pumping source are each located, said pumping source providing pumping energy for exciting said laser medium to produce stimulated laser emission, said apparatus comprising:

two sets of optical pumping arrangements for providing pumping energy, each comprising a reflector with a reflective inner surface which defines an elliptical cavity and a pumping source located along the focal line of the ellipse formed by said elliptical cavity, and holding a laser

medium in common along the other focal line of said ellipse;

current detecting means for detecting current flowing through said pumping source; and



changeover means for changing one set of said optical arrangements over to the other formerly held in reserve to be available when a current flowing through the pumping source of said one set of said optical arrangements falls below a predetermined value and is detected by said current detecting means.

4,566,108

BOTTOM-ELECTRODE ARRANGEMENT FOR A DIRECT-CURRENT ARC FURNACE

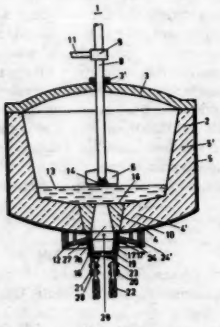
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jul. 24, 1984, Ser. No. 633,924

Claims priority, application Switzerland, Jul. 28, 1983, 4132/83

Int. Cl.⁴ H05B *7/00*

U.S. Cl. 373—108 **12 Claims**



1. A direct-current electric arc furnace for melting metals, comprising:

a furnace vessel including a bottom wall having interior and exterior surfaces;

at least a pair of electrodes, including a bottom electrode; and

a molded part formed of refractory material enveloping said bottom electrode to provide in combination therewith an electrode unit which is mounted in the bottom wall, said electrode unit having a cross-sectional shape tapered from said interior surface to said exterior surface such that said bottom electrode is removable in a direction toward the interior of the furnace vessel.

4,566,109

DOCUMENT HANDLING EQUIPMENT WITH COUNTER CONTROLLABLE COVER

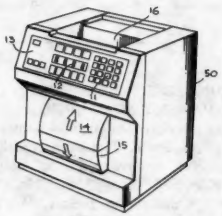
Fumiwo Sanuga, Tokyo, Japan, assignor to Bilcon Co., Ltd., Kawasaki, Japan

Filed Mar. 1, 1984, Ser. No. 585,209

Claims priority, application Japan, Mar. 2, 1983, 58-028924

Int. Cl.⁴ B65H *43/00, 43/06*

U.S. Cl. 377—2 **10 Claims**



1. An improved sheet-by-sheet paper feed counter, including:

counting means for counting passing sheets of paper;

a case enclosing said counting means and having an inlet and an exit for said sheets of paper to be stacked and retrieved respectively;

cover means sized and positioned to cover said exit and movable, alternatively, between positions covering said exit and, exposing said exit;

count-starting means coupled to said counting means for producing a signal controlling the commencement of the sheets feeding from said inlet;

a means for producing an end-of-count signal in response to the last sheet passing to said exit included in said counting means;

said cover means being coupled to said count-starting means and said end-of-count means and responsive to signals therefrom to cover said exit and expose said exit, respectively.

4,566,110

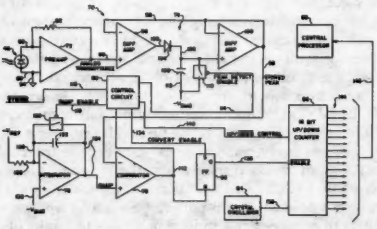
AUTO-ZEROING LINEAR ANALOG TO DIGITAL CONVERTER APPARATUS AND METHOD

Steven Kolber, Boca Raton, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sep. 17, 1982, Ser. No. 419,696

Int. Cl.⁴ H03M *1/06*

U.S. Cl. 377—10 **24 Claims**



1. A method of generating reaction effect data in the form of offset-error free digital transmission data derived by directing a beam of radiant energy through a plurality of cuvettes containing reaction samples, the cuvettes being partially transparent, the method comprising:

A. scanning the cuvettes seriatium with the beam during cuvette sample intervals by passing the beam through the

cuvettes containing reaction samples and directing the light transmitted therethrough to a sensor;

B. blocking the beam from passing to the sensor during at least one dark sample interval occurring other than during cuvette sample intervals;

C. generating from said sensor representative analog cuvette and dark transmittance signals representing, respectively, the quantity of light from said beam striking said sensor during said cuvette sample interval and during said at least one dark sample interval;

D. converting said representative analog cuvette and dark transmittance signals to digital cuvette and dark transmittance signals, said digital cuvette transmittance signals including an offset-error value and said digital dark transmittance signal representing the offset-error value; and

E. using the digital dark transmittance signal that represent the offset-error value to eliminate the offset-error value included in the digital cuvette transmittance signals.

4,566,111

WATCHDOG TIMER

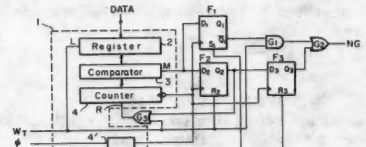
Kouji Tanagawa, Tokyo, Japan, assignor to OKI Electric Industry Co., Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 547,932

Claims priority, application Japan, Nov. 4, 1982, 57-192558

Int. Cl.⁴ H03K *21/30*

U.S. Cl. 377—28 **4 Claims**



1. A watchdog timer comprising;

a register (2) for presetting predetermined DATA upon receipt of a writing signal (W_T),

a counter (4) which is incremented by a clock pulse (ϕ),

a comparator (3) which compares contents of said register (2) with contents of said counter and providing a coincidence output signal when two contents coincide with each other,

a first flip-flop (F_1) for storing said coincidence output signal for one period of said clock pulse ϕ,

a second flip-flop (F_2) for storing said coincidence output signal upon receipt of said clock pulse ϕ,

a third flip-flop (F_3) for storing output of said second flip-flop F_2 upon receipt of said clock pulse ϕ,

an AND circuit (G_1) for providing logical product of a reverse output $\overline{Q_1}$ of said first flip-flop F_1 and said writing signal(W_T) , and

an OR circuit (G_2) for receiving an output of said third flip-flop F_3 and an output of said AND circuit (G_1) and producing an alarm signal NG which indicates an error of a computer to be monitored.

4,566,112

TOMOSYNTHESIS APPARATUS

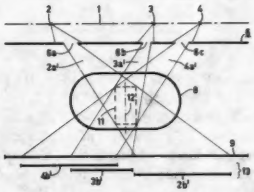
Rolf Linde, Haseldorf, and Erhard Klotz, Halstenbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 378,573, May 17, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 580,763

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121324

Int. Cl.⁴ G03B *41/16*

U.S. Cl. 378—2 **6 Claims**



1. A tomosynthesis apparatus for forming images of layers of a body, said apparatus comprising:

at least one radiation source for irradiating the body from a plurality of radiation source positions, said radiation source positions being situated in a radiation source plane on a first side of the body;

a diaphragm device positioned on the first side of the body between the radiation source plane and the body, said diaphragm having apertures therein for forming radiation beams which irradiate a common zone of the body; and

a detector in a detector plane located on a second side of the body opposite the first side;

characterized in that the apertures in the diaphragm are shaped and oriented such that the radiation beams formed therefrom have edge rays at the periphery of each beam, the edge rays being tangent to the boundaries of a cylinder situated within the common zone of the body, said cylinder having an axis transverse to the detector plane.

4,566,113

METHOD AND APPARATUS FOR EXAMINING THE CONTENT OF CONTAINERS

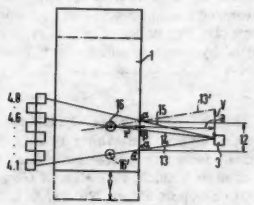
Gerhard Dönges, Heidenrod-Kemel; Thomas Herwig, Eltville-Martinsthal; Claus Kunze, Taunusstein, and Karl-Ulrich Stein, Munich, all of Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,996

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145227

Int. Cl.⁴ G01N *23/04*

U.S. Cl. 378—57 **2 Claims**



1. Method for examining the content of containers, which comprises weighing the container, comparing the weight of the container with a total weight derived from the weight of the unloaded container and the product of the volume and the packing weight of a declared load, transilluminating the con-

tainer with a spatially limited high energy X-ray beam, moving the container relative to the X-ray beam so as to scan one surface of the container from at least two different directions, determining and evaluating the distribution of the mass attenuation coefficient of the contents of the container along said two directions determining the filling height in the container from the change of the mass attenuation coefficient, determining the packing weight from the filling height and the weight of the load determined by weighing, comparing the packing weight with the packing weight of the declared container content and determining the spatial location of unknown container contents from the mass attenuation coefficients along said two directions.

4,566,114

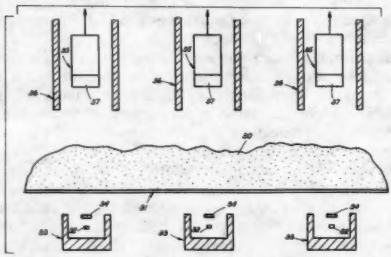
X- AND γ-RAY TECHNIQUES FOR DETERMINATION OF THE ASH CONTENT OF COAL

John S. Watt, Heathcote; Reginald A. Fookes, Caringbah, and Vilis L. Gravitis, Revesby, all of Australia, assignors to Australian Atomic Energy Commission, Coogee, Australia

Continuation-in-part of Ser. No. 161,252, Jun. 20, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,403

Int. Cl.⁴ G01N *23/20*

U.S. Cl. 378—88 **11 Claims**



1. A measuring apparatus for quantitative determination of the concentration of ash in coal or coke, which apparatus comprises at least two X-ray or γ-ray scatter assemblies. and means to compute said ash concentration from the outputs of said assemblies, the geometries of said assemblies each being arranged so that the detected X-ray or γ-ray intensity is a measure over substantially the same amount by volume of coal or coke sample, said assemblies each comprising an X-ray or γ-ray source, an energy-sensitive detector to detect scattered X-rays or γ-rays resulting from scattering in the coal or coke of X-ray or γ-rays from said source, an electronic analyzer associated therewith to select all or one or more parts of the detected X-ray or γ-ray spectrum as output from said assemblies, and shielding means for reducing the intensity of direct X-rays or γ-rays, said shielding means being specifically chosen to collimate partly the beam of X-rays or γ-rays in such way as to ensure maximized matched volumes and deep penetration in the coal or coke, and wherein the energy of the X-rays or γ-rays emitted by said assemblies differs from each other.

4,566,115

X-RAY DIAGNOSTIC SYSTEM FOR RADIOGRAPHS

Klaiis Brünn, Erlangen, and Walter Polster, Spardorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

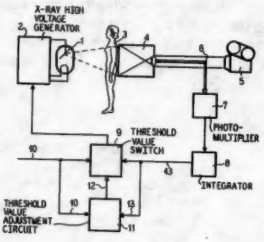
Continuation-in-part of Ser. No. 227,467, Jun. 22, 1981, abandoned. This application Oct. 6, 1983, Ser. No. 539,430

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1980, 3006049

Int. Cl.⁴ H05G *1/44*

U.S. Cl. 378—097 **1 Claim**

1. An X-ray diagnostic system for radiography, comprising an X-ray tube, an X-ray intensifier coupled with said X-ray tube for receiving an X-ray image and for supplying an intensified optical output image in accordance therewith, and a camera for photographing the X-ray image intensifier—optical output image, an automatic exposure timer which includes light sensing means for the detection of the optical output image, and an integrator connected with the output of the light sensing means for forming an integration signal in accordance with the light quantity per optical output image for the X-ray image intensifier, and a threshold means connected to the X-ray tube for switching off the X-ray tube, the threshold means having a control input for receiving a switch-off control signal for controlling when the X-ray tube is to be switched-off, and correction means having an input connected with the



integrator for receiving the integration signal representing the actual value of the light quantity per output optical image and having an input means for receiving a set point value representing a desired light quantity per optical output image, and having an output coupled with said control input which so determines the switch-off operation of said threshold means with respect to said integration signal that the X-ray tube is switched off by said threshold means before the integration signal reaches a value corresponding to the set point value representing the desired light quantity per optical output image, so that the actual value of the light quantity per optical output image is matched to the set point value in spite of a substantial persistence in the optical output image of said image intensifier.

4,566,116

SOFT X-RAY GENERATOR

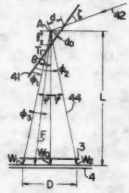
Asao Nakano, and Yutaka Hiratsuka, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1983, Ser. No. 488,758

Claims priority, application Japan, Apr. 30, 1982, 57-71201; Jul. 26, 1982, 57-128913

Int. Cl.⁴ H01J *35/00, 35/10, 35/14, 5/18*

U.S. Cl. 378—121 **11 Claims**



1. A soft X-ray generator comprising an electron gun for generating an electron beam, an anode irradiated with the electron beam to generate soft X-rays, and a vacuum chamber for containing said electron gun and said anode, wherein an incident angle ξ of the electron beam with respect to said anode, an angle θ formed between said anode and a line interconnecting a point at which the soft X-rays are generated in said anode and the center of a field of irradiation by the soft

X-rays, and an angle ζ formed between the line interconnecting said soft X-ray generating point and the center of said field of irradiation and a line interconnecting said soft X-ray generating point and an outer peripheral edge of said field of irradiation are selected so that a function

$$F = \frac{1}{\sin\theta} \exp\left(\frac{-\mu d \sin\xi}{\sin(\theta - \zeta)}\right)$$

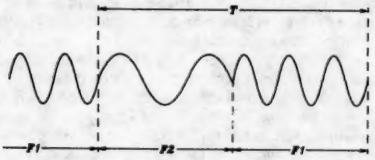
becomes a maximum, F being the intensity of the soft X-rays at a location in said field of irradiation where said intensity is most feeble, μ being the soft X-ray absorption coefficient of said anode and d being an average depth of said soft X-ray generating point in said anode, and wherein said electron gun, said anode and said field of irradiation are arranged at locations determined by the selected angles ξ, θ and ζ.

4,566,117

SPEECH SYNTHESIS SYSTEM

Leonard I. Suckle, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1982, Ser. No. 432,466
Int. Cl.⁴ G10L *1/00*
U.S. Cl. 381—51 **5 Claims**



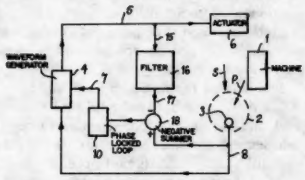
1. A method of generating elements of speech comprising: providing a short duration of a first formant frequency; providing a short duration of a second formant frequency; and alternating between the first and second formant frequencies at a pitch frequency rate.

4,566,118

METHOD OF AND APPARATUS FOR CANCELLING VIBRATIONS FROM A SOURCE OF REPETITIVE VIBRATIONS

George B. B. Chaplin, and Roderick A. Smith, both of Colchester, United Kingdom, assignors to Sound Attenuators Limited, Colchester, England

PCT No. PCT/GB82/00337, § 371 Date Jul. 25, 1983, § 102(e) Date Jul. 25, 1983, PCT Pub. No. WO83/02031, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 26, 1982, Ser. No. 522,172
Claims priority, application United Kingdom, Nov. 26, 1981, 8135628
Int. Cl.⁴ F10N *1/06*
U.S. Cl. 381—71 **8 Claims**



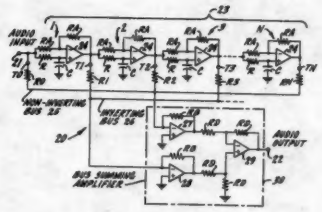
1. A method of generating a synchronising signal for an active vibration cancelling system in which a primary vibration, from a source of repetitive vibrations, entering a location is at least partially nulled by a specially generated secondary vibration fed to the location, the synchronising signal being used to synchronise the secondary vibrations to said source of repetitive vibrations, characterised in that the synchronising signal is obtained from the output of a residual vibration sensor located at said location by combining an electrical output from the vibration sensor with an electrical signal derived from the source of the secondary vibration.

4,566,119

EQUALIZER NETWORKS AND METHODS OF DEVELOPING SCALING COEFFICIENTS THEREFOR

Richard W. Peters, Algonquin, Ill., assignor to Industrial Products, Inc., Elk Grove Village, Ill.

Filed Oct. 12, 1983, Ser. No. 541,089
Int. Cl.⁴ H03G *5/00*
U.S. Cl. 381—103 **70 Claims**



1. A minimum-phase equalizer network adapted to develop an equalized output signal having a predetermined frequency response characteristic, with minimum ripple, over a preselected frequency range, comprising:

a series chain of N all pass delay stages, the chain having an initial tap connected to the input to the first stage in the chain and N additional taps each connected to the output of a succeeding stage in the chain;

M minimum-phase transversal filters, all connected to and each including the entire series chain of all pass delay stages as a part thereof, each filter developing an intermediate signal within a pass band representative of one of a contiguous series of M nominal frequency bands extending across the frequency range;

final summing circuit means for additively combining the intermediate signals in predetermined amplitude relation to each other to develop the equalized output signal; and

adjusting means for adjusting the amplitude of each intermediate signal, independently of the others, to adjust the overall frequency response characteristic of the equalizer network.

4,566,120

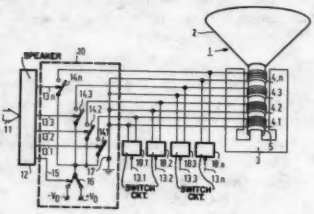
LOUDSPEAKER SYSTEM AND LOUDSPEAKER FOR USE IN A LOUD-SPEAKER SYSTEM FOR CONVERTING AN N-BIT DIGITIZED ELECTRIC SIGNAL INTO AN ACOUSTIC SIGNAL

Joris A. M. Nieuwendijk; Franciscus J. Op de Beek; Georgius B. J. Sanders; Wilhelmus D. A. M. Van Gijsel, and Jacob M. Van Nieuwland, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 7, 1984, Ser. No. 648,427
Claims priority, application Netherlands, Sep. 15, 1983, 8303186
Int. Cl.⁴ H04R *9/06*
U.S. Cl. 381—117 **6 Claims**

1. In a loudspeaker system for converting a digitized electric signal having a plurality of bits, each of said bits having a first or a second value, into an acoustic signal, said system having an electrodynamic loudspeaker comprising a voice coil device

having a plurality of voice coil sections corresponding in number to said plurality of bits of said digitized electric signal, said system further having means for driving each of said plurality of voice coil sections when a respective one of said bits has said first value, the improvement comprising



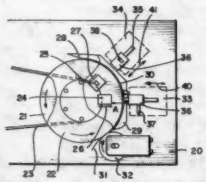
means for short-circuiting a voice coil section when the respective one of said plurality of bits has said second value.

4,566,121

PROCESS AND APPARATUS FOR IDENTIFYING ARTICLES OF SHEET MATERIAL BY MEANS OF MICROWAVES

Johan Samyn, Oostnieuwkerksesteenweg 199, 8800 Roeselare, Belgium

Filed Apr. 8, 1983, Ser. No. 481,242
Claims priority, application Luxembourg, Jul. 29, 1982, 84308
Int. Cl.[4] G06K 9/00; G01R 27/04
U.S. Cl. 382—7 **15 Claims**



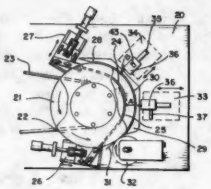
1. An apparatus for the identification of a sheet or plate article, the article being composed of an electrically non-conductive material and being marked for identification by the incorporation of electrically conductive materials, comprising: a frame; at least one first and at least one second microwave device, for producing waves, said first and second device being mounted on said frame one adjacent the other; at least one first and one second detector of waves transmitted by the article when the article is advanced before said devices, said detectors being placed in front of the respective microwave devices so, when the article is advanced, the article traverses each said detector and respective device in a traversing direction; a support for the article, said support positioned between said devices and said detectors; a circulator means or directional coupler means, associated with each said microwave device, for deviating waves reflected by the article towards a detector of said reflected waves; and, adjusting means for adjusting the respective distance between said microwave devices and said detectors of transmitted waves and said microwave devices and said support.

4,566,122

PROCESS AND APPARATUS FOR IDENTIFYING ARTICLES OF SHEET MATERIAL BY MEANS OF MICROWAVES

Johan Samyn, Oostnieuwkerksesteenweg 199, 8800 Roeselare, Belgium

Filed Apr. 8, 1983, Ser. No. 481,243
Claims priority, application Luxembourg, Jul. 29, 1982, 84307
Int. Cl.[4] G06K 9/00; G01R 27/04
U.S. Cl. 382—7 **28 Claims**



1. An apparatus for the identification of a sheet or article composed of an electrically non-conductive material, the article being marked for the identification, by the incorporation of electrically conductive materials comprising: a frame; at least two microwave devices, one adjacent the other, mounted in said frame; a support, for the article, placed in front of said microwave devices; at least two detectors for waves reflected by the article when the article is advanced before said devices, the article thereby traversing each said detector and respective device in a traversing direction; a circulator means or directional coupler means, associated with each said microwave devices, for deviating waves reflected by the article towards said detectors; a screen means, for reflecting waves, positioned in front of at least one of the microwave devices at a distance greater than that between said microwave device and said support; and, adjusting means for adjusting the respective distances between said microwave device and said screen and said microwave device and said support.

4,566,123

STANDARD MEMORY TAKE IN METHOD

Hajime Yoshida, c/o Hajime Industries Ltd., Kudan Sanzen Bldg., 2-5-9, Kudanminami, Chiyoda-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 289,498, Aug. 3, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,408
Claims priority, application Japan, Oct. 4, 1978, 53-122140
Int. Cl.[4] G06K 9/66
U.S. Cl. 382—15 **4 Claims**

1. A standard memory take-in method for selecting a set of standard data for use with a pattern recognition system in which a plurality of samples of data representing a single known object to be recognized and stored as a set of standard data are stored, said plurality of samples being compared with data representing a subsequent sample to decide whether or not said subsequent sample belonging to said single known object should be stored, said standard memory take-in method comprising the steps of:

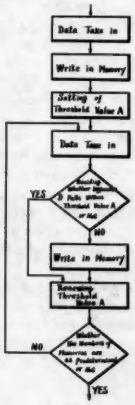
a. storing a first coming sample of data representing said object in a memory unconditionally as a standard data;
b. setting a predetermined threshold value which is used to determine whether or not a second coming sample of data is stored as a standard data;
c. taking in said second coming sample of data;
d. calculating a difference between said first coming sample of data and said second coming sample of data;
e. storing said second coming sample of data in said memory only if said difference exceeds said predetermined threshold value and refusing to store said second coming sample of data in said memory if said difference is less than said predetermined threshold value;
f. calculating differences between each subsequent sample of

data and each sample of data previously stored in said memory;

g. storing each subsequent sample of data in said memory only if all of said differences exceed said predetermined threshold value and refusing to store said subsequent sample of data in said memory if any of said differences is less than said predetermined threshold value;

h. checking whether said memory is fulfilled or not; and

i. repeating said steps c to g when said memory is not fulfilled to fulfil said memory.

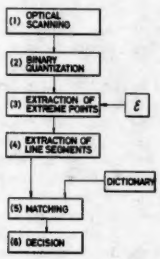


4,566,124

PATTERN READING SYSTEM

Kazuhiko Yamamoto, Ushiku, and Taiichi Saito, Ibaraki, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 10, 1983, Ser. No. 521,956
Claims priority, application Japan, Aug. 10, 1982, 57-139059
Int. Cl.⁴ G06K *9/78*
U.S. Cl. 382—21 **4 Claims**



1. A pattern reading system by line segment approximation, which comprises the steps of:

tracing the contour of a pattern given to be read and simultaneously detecting from a series of coordinate point vectors of the contour, a contour point at which the inner product of the coordinate point vector of the contour point and a directional vector in a plurality of prescribed directions has the largest value;

storing the coordinates and said inner product of the detected point in memories;

feeding out said coordinates of said detected point as an extreme point when the difference between said inner product in said detected point and inner product of a coordinate point vector of a successive contour point and said directional vector exceeds an allowance fixed in advance;

extracting convex and concave structures of said pattern by using said extreme points fed out as points of polygonal approximation in said contour of pattern, and

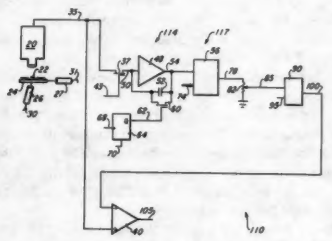
matching a pattern composed of said convex and concave structures with a preparatorily set dictionary and reading said pattern based on maximum values of feature magnitudes.

4,566,125

APPARATUS AND METHOD FOR PATTERN LOCATION

Robert H. Clunn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 8, 1982, Ser. No. 447,868
Int. Cl.⁴ G06K *9/20*
U.S. Cl. 382—48 **6 Claims**



1. Apparatus for location of a predetermined pattern on a surface of an object comprising:

a. an imaging camera incident to light reflected from said object producing an analog output corresponding to an image of said surface during each of a plurality of optical scans;

b. a reference memory storing a reference representation of said predetermined pattern;

c. an adaptive threshold circuit connected to receive said analog output for receiving one optical scan of said optical scans and producing a threshold output determined from the magnitude of at least a portion of said analog output, the adaptive threshold circuit includes an integrator means for integrating the analog output over one scan of said plurality of optical scans, and a normalizing means for normalizing the magnitude of the integrated analog output by a factor corresponding to the area of said scan to obtain the threshold signal thereby;

d. a comparator connected at one input to receive said analog output and another input to receive said threshold output, said comparator producing an indication at a digital output when the difference between the magnitudes of said threshold output exceed a preselected value;

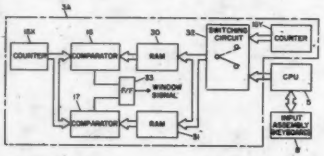
e. a video memory connected to said comparator to receive said digital output and storing a digital representation of said image; and

f. a logic network connected to said video memory and said reference memory and detecting location of aid predetermined pattern within said image.

4,566,126
PATTERN DISCRIMINATOR

Michiaki Miyagawa, Hachiooji; Kouichi Ohki, Tokyo; Matsuhiko Takaya, Hino; Naoto Fujihara, Hino, and Tadayuki Yamada, Hino, all of Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed Apr. 11, 1983, Ser. No. 483,505
Claims priority, application Japan, Apr. 30, 1982, 57-71498; Apr. 30, 1982, 57-71499; Apr. 30, 1982, 57-71500
Int. Cl.[4] G06K 9/00
U.S. Cl. 382—48 8 Claims



1. In a pattern discriminator which receives scanning data obtained by scanning objects within defined window regions with a photoelectric converter of the two-dimensional scanning type, and having means for converting the scanned data into pixel binary data representing characteristics of the objects scanned by using a threshold value, and having means for evaluating the binary data in accordance with predetermined criteria and for producing an output signal indicative of said evaluation, the improvement comprising means for obtaining data which defines polygonal window regions within which scanning data is obtained, comprising:

data input means for inputting apex data representing the location of the pixels at the apexes of at least one window polygon representing at least one desired window region;

computing means for computing coordinate data representing the coordinates of each pixel on the polygon perimeter lines connecting adjacent apexes by taking the coordinates of sequentially inputted apex data as adjacent apexes of the window polygon; and

memory means for storing the apex and coordinate data as starting and ending pixels of each polygonal window region on each scanning line of said scanning.

4,566,127
COMPLEX SYSTEM HAVING THE FUNCTIONS OF OPTICAL CHARACTER READER AND FACSIMILE

Kunihiko Sekiya, Yokohama; Kenio Sakai, Urayasu; Shoichi Hirai, Yokohama; Shigeru Miyao, and Masatoshi Fukuda, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 30, 1982, Ser. No. 413,161
Claims priority, application Japan, Oct. 9, 1981, 56-160268
Int. Cl.[4] G06K 9/00; G06F 3/14
U.S. Cl. 382—56 1 Claim

1. A system having an optical character reader function, a facsimile function, and an image editing function, comprising:

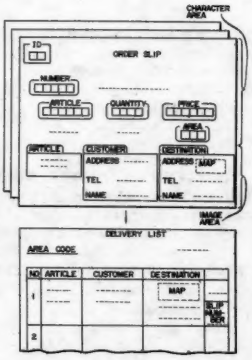
scanning means for optically scanning documents to produce electrical signals indicative of character-image information on the documents, said documents including a document of a first predetermined format having a character area in which character groups each having a predetermined attribute are disposed in predetermined first locations of the document, and an image area in which images each having a predetermined attribute are disposed in predetermined second locations of the document, the document of said first format having a detecting character group in a predetermined location of the character area which is adapted to detect whether or not the document is of the first format;

communication control means for effecting communication of the character-image information on the documents including the document of the first format with external devices through facsimile communication lines;

character recognition means connected to receive the character information from said scanning means and said communication control means for recognizing characters on the character area of the document of the first format to produce character code information;

character-image file means for storing character information, obtained from said scanning means and said communication control means, of the characters in the character area and the image information in the image area of the document of the first format, in predetermined locations thereof, said character-image file means comprising a buffer region adapted for temporarily storing the character-image information from said scanning means and said communication control means, an image region adapted for storing the image information on the image area of the document of the first format, and a character code region adapted for storing the character code information on the character area of the document of the first format from said character recognition means;

processing mode designating means for designating processing modes to be performed, said processing modes including an editing mode in which the character-image information of the first format stored in said character image file means is rearranged according to a second format



different from the first format, and a printing mode in which the edited character-image information is printed out;

processor means responsive to the designation of a processing mode by said processing mode designating means for implementing the designated processing mode, said processor means including, when the editing mode is designated, means for receiving the character-image information from said character-image file means, means for causing said recognizing means to recognize said detecting character group of the character area to detect whether or not the document is of the first format, and, when the document is of the first format, to recognize the character groups on the remaining portion of the character area of the document; means for transferring the image information to said image region of said character-image file means and the character code information to said character code region of said character-image file means after said recognizing means has recognized the character information in the character area of the document when the document is of the first format;

means for receiving the character code information corresponding to recognized characters and the image information on the document of the first format stored in said character-image file means, and for arranging the character code information and the image information of the

document of the first format according to the second format; and

printing means responsive to the designation of the printing mode by said processing mode designating means and an instruction thereto from said processor means for printing the edited character image information from said processor means on a sheet of the second format.

4,566,128

METHOD FOR DATA COMPRESSION FOR TWO-VALUE PICTURE IMAGE

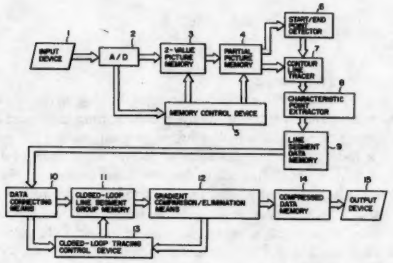
Shuichi Araki, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Jul. 18, 1983, Ser. No. 514,674

Claims priority, application Japan, Sep. 13, 1982, 57-159225

Int. Cl.⁴ G06K *9/48*

U.S. Cl. 382—56 **3 Claims**



1. Method for data compression for two-value picture image, characterized by the steps of:

dividing an original picture image into a plurality of partial picture images;

determining a start point and an end point of each contour line found in each of the partial picture images by finding the intersections between the contour line and the lines dividing the original picture image into the partial picture images;

detecting characteristic points in each contour line by tracing the contour line in each of the partial picture images from the corresponding start point and end point;

extracting those start points and end points which connect to those in the neighboring partial picture images and the characteristic points as necessary coordinate points for determining a group of closed-loop line segments as an aggregate of the contour lines; and

further compressing the data of the original picture image by removing any redundant coordinate point data through comparison of the gradients of the closed-loop line segments for each neighboring coordinate point pairs on the particular contour line.

4,566,129

RESEALABLE BAG AND TAMPER PROOF SEALING RING

Douglas D. McNamee, 8804 Bluff La., Fair Oaks, Calif. 95628

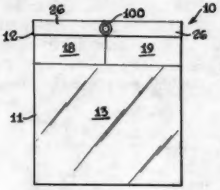
Filed Dec. 21, 1983, Ser. No. 563,725

Int. Cl.⁴ B65D *33/14*

U.S. Cl. 383—5 **1 Claim**

1. A tamper proof sealing element for use in conjunction with a bag assembly, wherein the bag assembly comprises front and rear bag panels secured together by a closure element, and having an aperture extending through the closure element and at least one of said front and rear bag panels, wherein the tamper proof sealing element comprises;

an elongated spirally wound strip extending through said suspension aperture and secured in a generally circular



fashion to both the front and rear faces of the bag assembly.

4,566,130

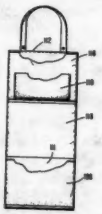
COMBINATION CARRYING BAG FOR INFANT ACCESSORIES AND DIAPERING STATION

Fredrica Coates, 1608 Dublin Rd., Charlottesville, Va. 22903

Continuation-in-part of Ser. No. 465,371, Feb. 10, 1983. This application Apr. 7, 1983, Ser. No. 482,722

Int. Cl.⁴ A45C *9/00*; A45F *4/06*

U.S. Cl. 383—15 **17 Claims**



1. A bag for carrying diapers and other paraphernalia, comprising a middle section and first and second end sections having approximately the same size, fold lines being established between adjacent sections to enable the end sections, in a folded position, to fold inwardly, one over the other, onto the middle section, a first pocket being provided on an inner surface of the first end section and having a side opened toward the middle section to retain diapers, a handle means formed of at least one continuous strap having at least one side secured to said bag, and means for releasably securing the bag in the folded position, wherein said handle means includes a first handle loop having ends secured to a free edge of said second end section, a U-shaped fold formed in the outer surface of the bag along the fold line between said first end section and said middle section; a second handle loop secured to said fold, and said releasably securing fastener means includes means on said handle loops to releasably secure together said loops.

4,566,131

VALVED BAG

Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 625,213

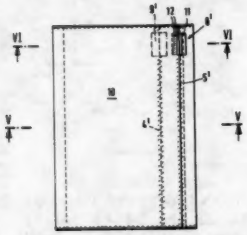
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323587

Int. Cl.⁴ B65D *30/29*

U.S. Cl. 383—44 **6 Claims**

1. A valved bag comprising a section of a plastic film web, in which side portions of the plastic film web have been infolded to overlap each other and in which the film web has been provided with transverse top and bottom seams, and in an overlap area of the side portions has been provided with two

spaced apart parallel longitudinal seams, which join only said side portions, the longitudinal seams comprising portions of respective strips of adhesive extending essentially between the transverse seams of the film web and in contact with both side portions of the film web at respective edges of the overlap area of the side portions, with at least a part of one of said side portions being provided with a slip of material which includes an adhesive bond-inhibiting leg portion and which is joined by



means of a pressure-sensitive adhesive to the one side portion, with the leg portion of said slip of material extending across adjacent adhesive and protruding to the outside of the bag from the area in which the side portions of the film web overlap, such that the slip of material precludes the part of the one side portion and an opposed part of the other side portion from being joined by the adjacent adhesive and thereby defines at least a portion of a filling passage for the bag.

4,566,132

MULTIFUNCTION ULTRA-HIGH FREQUENCY CIRCUIT AND MEANS USING SUCH A CIRCUIT

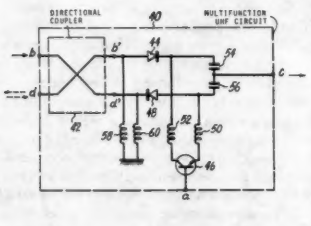
Sylvain Meyer, 36 Résidence duroux, 22300 Lannion; Michel Goloubkoff, Penvern, 22560 Pleumeur Bodou, and Jean Guéna, 30 Cité Morgane, 22560 Trébeurden, all of France

Filed Jan. 6, 1983, Ser. No. 456,091

Claims priority, application France, Jan. 8, 1982, 82 00194

Int. Cl.⁴ H04B *1/40*

U.S. Cl. 455—86 **6 Claims**



1. A multifunction ultra-high frequency circuit, wherein it comprises:

a 3 dB directional coupler having a first access (b), a second access (d), a third access (b') and a fourth access (d');

a branch having in series a first diode, a transistor and a second diode, the transistor having a base connected to a fifth access (a) for controlling its conductive or blocking state, an emitter connected to a first rejection inductor to one of the diodes and a collector connected via a second rejection inductor to the other diode, said branch being connected between the third and fourth accesses of the coupler and having impedances equal to a matching value when the transistor is in the conductive state;

two lines having at least one quarter-wave element connecting the earth to the two diodes;

a sixth access (c) connected to the two diodes between two capacitors.

4,566,133

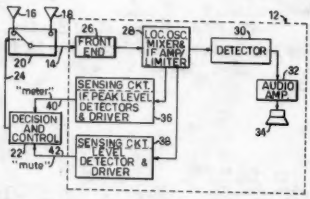
SWITCHED DIVERSITY METHOD AND APPARATUS FOR FM RECEIVERS

William R. Rambo, Stanford, Calif., assignor to Commtech International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 453,470, Dec. 27, 1982, Pat. No. 4,499,606. This application Feb. 13, 1984, Ser. No. 579,786

Int. Cl.⁴ H04B *7/08*

U.S. Cl. 455—277 **37 Claims**



1. In an FM diversity receiver system having at least two antennas, antenna switching means for switching the receiver system from one antenna to the other, sensing means for producing a fade control signal related to the amplitude of the received FM signal, multipath disturbances in the received signal such as frequency selective fading and non-multipath disturbances such as received electrical noise impulses, including ignition noise signals, being manifested in said fade control signal, decision and control means responsive to the fade control signal from said sensing means for producing an antenna switching signal for control of said switching means, the improvement wherein said decision and control means comprises,

means for establishing a threshold voltage, and

means for comparing the threshold voltage to the magnitude of disturbances manifested in the fade control signal and for momentarily disabling antenna switching operation for a time period when the disturbances manifested in the fade control signal initially exceeds the threshold voltage to prevent antenna switching in response to short duration disturbances produced by electrical noise impulses, including ignition noise signals.

4,566,134

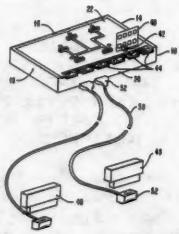
CIRCUIT FOR INTERFACING REMOTE FUNCTIONAL UNITS TO A TERMINAL

Edward E. Harbour; Robert C. Lynch, both of Cary, and George R. Stilwell, Jr., Raleigh, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 456,071, Jan. 6, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 679,526

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—607 **16 Claims**



1. In a terminal device having one or more integrated func-

tional units which communicate with each other by means of optical signals propagated through a closed chamber, a circuit for interfacing one or more remote functional units to the chamber where each of the remote functional units is connected to the terminal device through a signal carrying cable, said interfacing circuit being characterized by:

(a) an optoelectronic transducer having a single detector responsive to optical energy extent in the chamber for generating representative signals and a single emitter for converting signals from the remote functional units to an optical format suitable for injection into the chamber;

(b) a plurality of signal producing elements, each located at the terminal end of one of the signal-carrying cables;

(c) signal conducting means connected to the detector and to said plurality of signal producing elements for conducting the representative signals to each of the signal producing elements; and

(d) means being responsive to the signals received through any of the cables from the remote functional units and operable for logically combining said received signals to provide a single drive signal for enabling the single emitter in said optoelectronic transducer.

4,566,135

PRESSURE TRANSDUCER

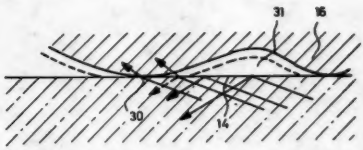
Dieter W. Schmidt, Steinbreite 16a, Goettingen, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 564,096

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247843

Int. Cl.[4] H04B 9/00

U.S. Cl. 455—614 **10 Claims**



1. A pressure transducer comprising:

(a) a base body having a plane surface and consisting of a material which is transparent for optical radiation;

(b) a diaphragm positioned to contact said plane surface at a plurality of spaced regions, the area of which being variable by pressure variations applied to said diaphragm;

(c) means for coupling optical radiation into said base body so that said radiation impinges on said plane surface and undergoes total reflection at portions of said surface not contacted by said diaphragm;

(d) means for deriving an output signal in response to a variation of total reflection of said radiation caused by said variation of the area of said regions of contact between said base body surface and said diaphragm.

DESIGN PATENTS

GRANTED JAN. 21, 1986

ERRATA

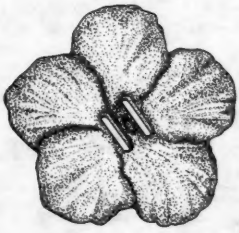
For CLASS	See PATENT NO.
D21–121	282,218

282,212
TROUSERS
Rita Langmyr, P.O. Box 12061, S-250 12 Helsingborg, Sweden
Filed Sep. 8, 1983, Ser. No. 530,223
Claims priority, application Sweden, Mar. 15, 1983, 83-0745
Term of patent 14 years
U.S. Cl. D2—28

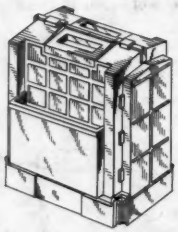
282,213
PENGUIN BOOT
Peter Valori, London, England, assignor to Button Fronts (London) Limited, London, England
Filed Dec. 12, 1983, Ser. No. 560,160
Claims priority, application United Kingdom, Jun. 10, 1983, 1013498
Term of patent 14 years
U.S. Cl. D2—273

282,214
BOOT
Peter Valori, London, England, assignor to Button Fronts Ltd., London, England
Filed Aug. 26, 1983, Ser. No. 526,872
Claims priority, application United Kingdom, Mar. 1, 1983, 83-1011707
Term of patent 14 years
U.S. Cl. D2—273

282,215
BELT BUCKLE
Ellen F. Foreman, Rte. 6, Box 301-B, Andalusia, Ala. 36420
Filed Oct. 3, 1983, Ser. No. 538,483
Term of patent 14 years
U.S. Cl. D2—431

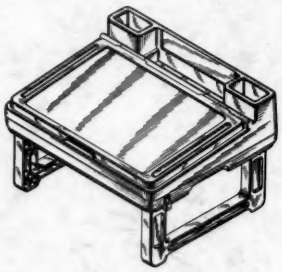


282,216
SEWING BOX
John S. Doyel, 404 W. 20th St., New York, N.Y. 10016
Filed Apr. 25, 1983, Ser. No. 488,164
Term of patent 14 years
U.S. Cl. D3—20

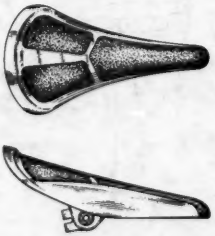


282,217
BEAUTY CASE
André Seynhaeve, Senlis, France, assignor to Ste Delsey, Bobigny, France
Filed Apr. 28, 1983, Ser. No. 489,437
Claims priority, application France, Nov. 17, 1982, 823,966
Term of patent 14 years
U.S. Cl. D3—39

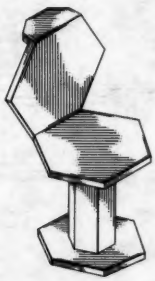
282,218
BLACKBOARD DESK TOY
Pietro Catelli, Como, Italy, assignor to Artsana S.p.A., Italy
Filed Jul. 28, 1983, Ser. No. 518,149
Term of patent 14 years
U.S. Cl. D21—121



282,219
CYCLE SEAT OR SIMILAR ARTICLE
Charles Persons, Huron, Ohio, assignor to Persons-Majestic Manufacturing Company, Monroeville, Ohio
Filed Apr. 25, 1983, Ser. No. 488,054
Term of patent 14 years
U.S. Cl. D6—354



282,220
CHAIR
Angelo J. Ianuzzi, 7070 N. 59th Pl., Paradise Valley, Ariz. 85253
Filed Aug. 19, 1983, Ser. No. 524,763
Term of patent 14 years
U.S. Cl. D6—365



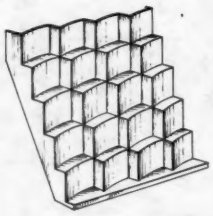
282,222
DESK CHAIR
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Jan. 3, 1983, Ser. No. 455,231
The portion of the term of this patent subsequent to Oct. 1, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366

282,221
HIGH BACK DESK CHAIR
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Jan. 3, 1983, Ser. No. 455,229
The portion of the term of this patent subsequent to Oct. 1, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366

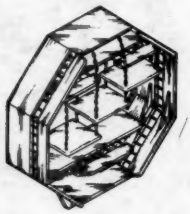
282,223
CHAIR
Yaun H. Lee, 28-14 Youngdabdon, Sungdong-Ku, Seoul, Rep. of Korea
Filed Jun. 23, 1983, Ser. No. 492,187
Claims priority, application Rep. of Korea, Jul. 8, 1982, 6104/1982
Term of patent 14 years
U.S. Cl. D6—368

282,224
CHAIR
Johan Huldt, Stockholm, Sweden, assignor to Johan Huldt Design AB, Stockholm, Sweden
Filed Oct. 22, 1982, Ser. No. 435,954
Claims priority, application Sweden, Apr. 29, 1982, 82-1119
Term of patent 14 years
U.S. Cl. D6—375

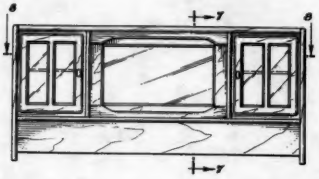
282,225
MAGAZINE DISPLAY RACK
Hal D. Sandy, 4937 Glendale Rd., Shawnee Mission, Kans. 66205
Filed Dec. 12, 1983, Ser. No. 559,638
Term of patent 14 years
U.S. Cl. D6—474



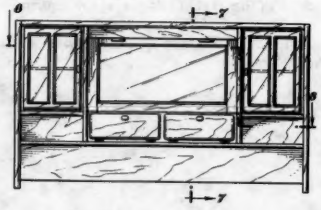
282,226
ENTERTAINMENT CENTER
Vincent A. Branciforti, 2312 Artic Ave., Atlantic City, N.J. 08401
Filed Aug. 10, 1983, Ser. No. 521,888
Term of patent 14 years
U.S. Cl. D6—474



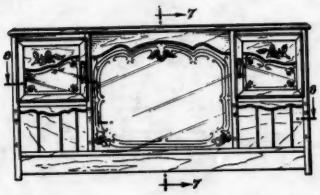
282,227
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,184
Term of patent 14 years
U.S. Cl. D6—505



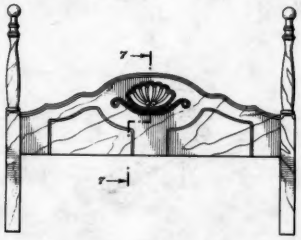
282,228
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,186
Term of patent 14 years
U.S. Cl. D6—505



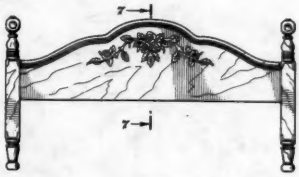
282,229
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,187
Term of patent 14 years
U.S. Cl. D6—505



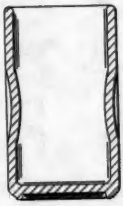
282,230
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,248
Term of patent 14 years
U.S. Cl. D6—505



282,231
HEADBOARD
Vincent P. Scully, Los Angeles, and Leon E. Waxman, Sherman Oaks, both of Calif., assignors to Water & Wood Mfg., Gardena, Calif.
Filed Sep. 27, 1983, Ser. No. 536,188
Term of patent 14 years
U.S. Cl. D6—506

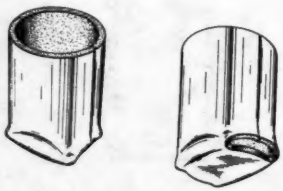


282,232
TUMBLER
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Jun. 22, 1983, Ser. No. 506,808
Term of patent 14 years
U.S. Cl. D7—6



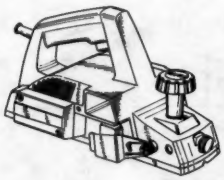
282,233
COMBINED FOOD ORGANIZER AND SERVING TRAY
Thomas P. Kelley, 11434 W. Pico Blvd., West Los Angeles, Calif. 90064
Filed Jul. 7, 1983, Ser. No. 511,737
Term of patent 14 years
U.S. Cl. D7—27

282,234
BEVERAGE INSULATOR
Scott R. Henderson, 5025 Eagle Pass, Plano, Tex. 75023
Filed Dec. 1, 1983, Ser. No. 557,222
Term of patent 14 years
U.S. Cl. D7—70

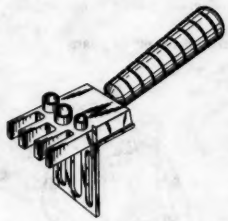


282,235
STORAGE RACK FOR FOOD PROCESSOR BLADES
Edward A. Pendleton, 10 Ipswich Ave., Great Neck, N.Y. 11021
Filed Feb. 18, 1983, Ser. No. 467,964
Term of patent 14 years
U.S. Cl. D7—74

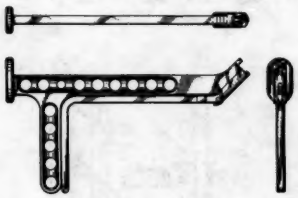
282,236
ELECTRIC PLANE
Takeshi Shohoji, Chiba, and Yutaka Kanamaru, Kanagawa, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Sep. 29, 1983, Ser. No. 537,240
Claims priority, application Japan, Apr. 5, 1983, 58-14549
Term of patent 14 years
U.S. Cl. D8—61



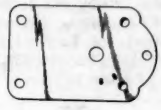
282,237
DOWEL JIG
Joseph H. Warburg, Monsey, N.Y., assignor to Arco Products Corp., Englewood, N.J.
Filed Sep. 1, 1983, Ser. No. 528,707
Term of patent 14 years
U.S. Cl. D8—71

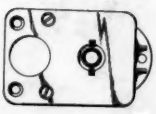


282,238
RASP HANDLE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Apr. 15, 1983, Ser. No. 485,369
Term of patent 14 years
U.S. Cl. D8—94

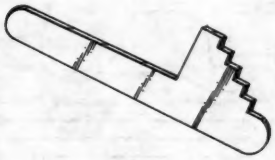


282,239
COMBINED CASE AND COVER FOR A QUICK MOUNT COMBINATION LOCK
Joseph M. Remenicky, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.
Filed May 13, 1983, Ser. No. 494,418
Term of patent 14 years
U.S. Cl. D8—330

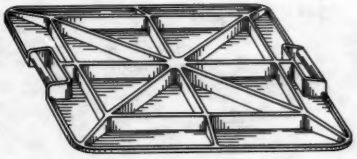




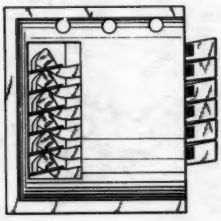
282,240
GASOLINE PUMP LEVER HOLDER
Luther G. Gilford, 16694 Turner, Detroit, Mich. 48221
Filed Oct. 14, 1983, Ser. No. 541,869
Term of patent 14 years
U.S. Cl. D8—349



282,241
OUTRIGGER PAD
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Filed Jan. 28, 1983, Ser. No. 461,695
Term of patent 14 years
U.S. Cl. D8—373

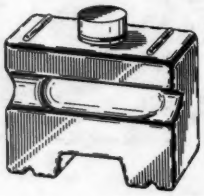


282,242
DISPOSABLE RAZOR PACKAGE
Donald Thorpe, Madison, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 16, 1983, Ser. No. 494,816
Term of patent 14 years
U.S. Cl. D9—337

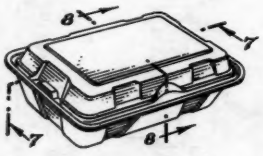


282,243
GAS PRODUCING AND INDICATING PACKAGE
Edwin W. Mason, Wyckoff, N.J., assignor to Mason-Keller Corporation, Roseland, N.J.
Filed Mar. 15, 1983, Ser. No. 475,614
Term of patent 14 years
U.S. Cl. D9—345

282,244
LIQUID CONTAINER
Carl V. Santoiemmo, Gates Mills, Ohio, assignor to Norcarl Products, Inc., Gates Mills, Ohio
Filed Aug. 3, 1983, Ser. No. 520,121
Term of patent 14 years
U.S. Cl. D9—367

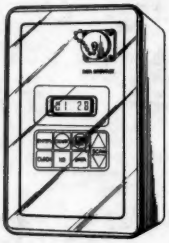


282,245
FOOD CONTAINER
Yat K. Yeung, Los Angeles, Calif., assignor to Sunlux Best Group, USA, Inc., Los Angeles, Calif.
Filed Jun. 20, 1983, Ser. No. 505,924
Term of patent 14 years
U.S. Cl. D9—425



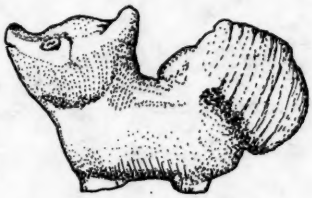
282,246
PORTABLE TRANSMITTER UNIT FOR A METALLIC OBJECT DETECTOR
Richard C. Thomas, Cramlington, and David J. Daniels, Pontefland, both of England, assignors to British Gas Corporation, London, England
Filed Jul. 19, 1983, Ser. No. 515,159
Claims priority, application United Kingdom, Jan. 21, 1983, 1010940
Term of patent 14 years
U.S. Cl. D10—47

282,247
FLUID LEVEL MONITOR
Mark A. Faris; John A. Miller, and H. Kent Wainwright, all of Laramie, Wyo., assignors to In-Situ, Inc., Laramie, Wyo.
Filed May 9, 1983, Ser. No. 492,570
Term of patent 14 years
U.S. Cl. D10—101

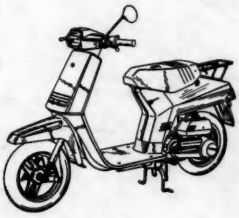


282,248
FIGURINE OF A BABY GIRAFFE
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jan. 17, 1983, Ser. No. 458,293
Term of patent 14 years
U.S. Cl. D11—158

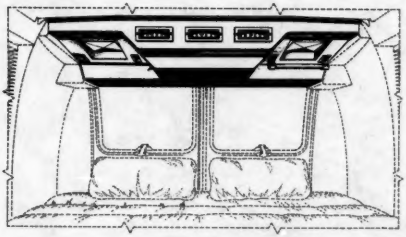
282,249
FIGURINE OF A BABY FOX
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 15, 1983, Ser. No. 532,400
Term of patent 14 years
U.S. Cl. D11—158



282,250
MOTORCYCLE
Kentaro Ito, Tokyo; Shoichi Kuwahata, and Munehito Nakamura, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1983, Ser. No. 464,719
Claims priority, application Japan, Aug. 10, 1982, 57-36234
Term of patent 14 years
U.S. Cl. D12—110

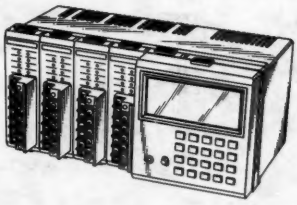


282,251
CONSOLE FOR VAN CONVERSION
Robert O. Isham, Decatur, and Wayne S. Reese, Richland Hills, both of Tex., assignors to TRA-TECH Corporation, Fort Worth, Tex.
Filed Mar. 7, 1983, Ser. No. 472,967
Term of patent 14 years
U.S. Cl. D12—155

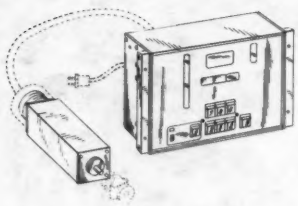


282,252
GENERATOR
Hiroshi Yamaguchi, Omiya; Yukinori Ito, Kawagoe, and Mitsuhiko Shibata, Kasukabe, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 22, 1983, Ser. No. 524,946
Claims priority, application Japan, Feb. 23, 1983, 58-7457
Term of patent 14 years
U.S. Cl. D13—2

282,253
PROGRAMABLE CONTROLLER
Norio Shimizu, and Yuichi Watanabe, both of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1983, Ser. No. 465,414
Claims priority, application Japan, Sep. 9, 1982, 57-41248; Sep. 9, 1982, 57-41249
Term of patent 14 years
U.S. Cl. D13—12

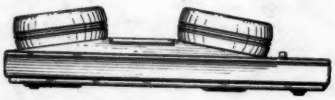


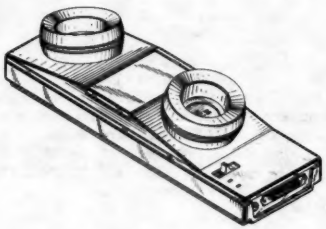
282,254
PROGRAMMABLE LIMIT SWITCH UNIT
Peter G. Serev, Woodbury, and Roger M. Bogin, Washington Depot, both of Conn., assignors to C & A Products, Inc., Washington Depot, Conn.
Filed Nov. 9, 1982, Ser. No. 440,284
Term of patent 14 years
U.S. Cl. D13—35



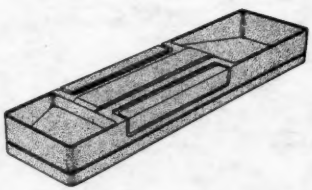
282,255
LOUDSPEAKER ENCLOSURE
Robert Ross, San Francisco, Calif., assignor to Meyer Sound Laboratories, Inc., Berkeley, Calif.
Filed Sep. 16, 1982, Ser. No. 418,733
Term of patent 14 years
U.S. Cl. D14—33

282,256
ACOUSTICALLY COUPLED MODEM
Masahiko Mizuno, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan
Filed Aug. 19, 1983, Ser. No. 524,620
Claims priority, application Japan, Feb. 24, 1983, 58-7314
Term of patent 14 years
U.S. Cl. D14—57



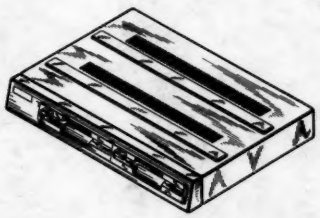


282,257
TELEPHONE STAND
Cristian J. Felix, Flushing, N.Y.; Donald M. Genaro, Haworth; Carl W. Gomes, II, Ocean, both of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to AT&T Information Systems, Holmdel, N.J.
Filed May 17, 1985, Ser. No. 735,892
Term of patent 14 years
U.S. Cl. D14—60

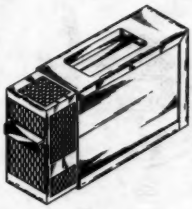


282,258
BASE FOR A TELEPHONE SET
Wilbert C. Brown, Fairfield, Conn., assignor to TIE/Communications, Inc., Shelton, Conn.
Filed Jul. 18, 1983, Ser. No. 514,839
Term of patent 14 years
U.S. Cl. D14—62

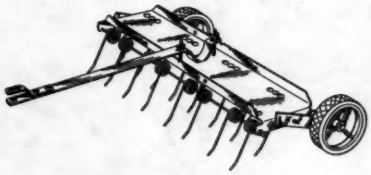
282,259
COMPUTER DISC DRIVE
Chiaki Kuroiwa, and Masahiko Mizuno, both of Shiojiri, Japan, assignors to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan
Filed Aug. 19, 1983, Ser. No. 524,619
Claims priority, application Japan, Feb. 24, 1983, 58-7315
Term of patent 14 years
U.S. Cl. D14—109



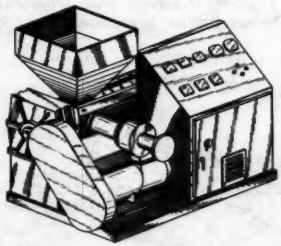
282,260
HOUSING FOR COMPUTER MODULE
Richard E. Carlson, New Hope, Minn., and Michael E. McCadden, Centuria, Wis., assignors to Zycad Corporation, Arden Hills, Minn.
Filed Feb. 14, 1983, Ser. No. 466,307
Term of patent 14 years
U.S. Cl. D14—114



282,261
TRAILING DETHATCHER
Charles W. Doering, Louisville, Ky., assignor to Brinly-Hardy Co., Inc., Louisville, Ky.
Filed Dec. 13, 1983, Ser. No. 560,982
Term of patent 14 years
U.S. Cl. D15—27



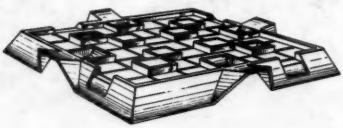
282,262
THERMOPLASTIC MATERIAL EXTRUDER
Dario J. Ramazzotti, Sandy Springs, Ga., assignor to Nordson Corporation, Amherst, Ohio
Filed Feb. 22, 1983, Ser. No. 468,738
Term of patent 14 years
U.S. Cl. D15—145



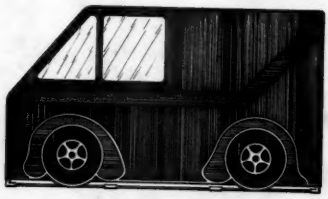
282,263
MUSIC BOX
Chong T. Ahn, P.O. Box 3194, San Leandro, Calif. 94578
Filed Nov. 7, 1983, Ser. No. 548,914
Term of patent 14 years
U.S. Cl. D17—24

282,264
CUTTING GUIDE FOR REPLACEMENT OF MODEL RAILROAD COUPLERS
James A. Wiese, 1309 Mississippi Blvd. P.O. Box 737, Bettendorf, Iowa 52722
Filed Jun. 16, 1983, Ser. No. 504,816
Term of patent 14 years
U.S. Cl. D19—37

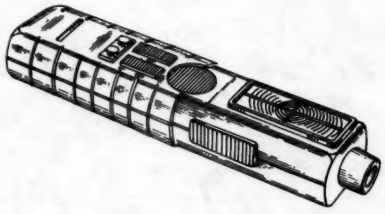
282,265
GAMEBOARD
Joseph F. Hyland, Nokomis, Fla.; Wayne J. Yee, Springfield, Mass., and Louis W. Wurmnest, South Windsor, Conn., assignors to Milton Bradley International, Inc., Springfield, Mass.
Filed Jan. 24, 1983, Ser. No. 460,199
Term of patent 14 years
U.S. Cl. D21—17



282,266
TOY PLAY VAN
Lawrence D. Richards, Huntington Station, N.Y., assignor to Arco Industries Ltd., Kowloon, Hong Kong
Filed May 20, 1983, Ser. No. 496,481
Term of patent 14 years
U.S. Cl. D21—115

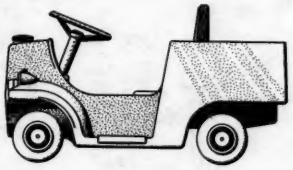


282,267
TOY ELECTRIC TOOTHBRUSH HOLDER
Patrick J. Coyne, Cleveland Heights, Ohio, assignor to Meritus Industries, Inc., Fairfield, N.J.
Filed May 19, 1983, Ser. No. 496,238
Term of patent 14 years
U.S. Cl. D21—122

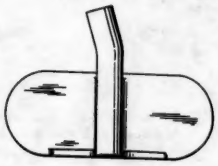


282,268
TOY TOOTHPASTE DISPENSER
Patrick J. Coyne, Cleveland Heights, Ohio, assignor to Meritus Industries, Inc., Fairfield, N.J.
Filed May 19, 1983, Ser. No. 496,253
Term of patent 14 years
U.S. Cl. D21—122

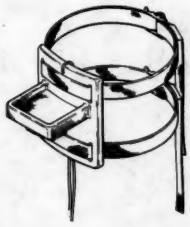
282,269
TOY VEHICLE
James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224
Filed Jun. 29, 1983, Ser. No. 508,920
Term of patent 14 years
U.S. Cl. D21—137



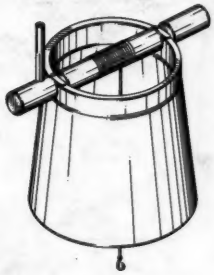
282,270
PUTTER HEAD
Kenneth W. Burgess, Macclesfield, England, assignor to The E.C.K. Manufacturing Co., Ltd., United Kingdom
Filed Dec. 15, 1983, Ser. No. 561,526
Claims priority, application United Kingdom, Jun. 17, 1983, 1013630; Nov. 30, 1983, 1016631
Term of patent 14 years
U.S. Cl. D21—217



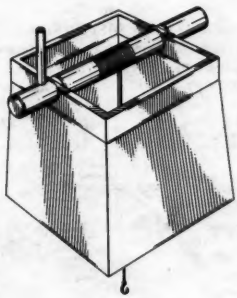
282,271
ARCHER'S THIGH-FASTENED BOW SUPPORT
Dale Morrell, P.O. Box 233, Dyer, Ark. 72935
Filed Aug. 15, 1983, Ser. No. 523,166
Term of patent 14 years
U.S. Cl. D22—13



282,272
CONICALLY SHAPED ICE FISHING BOX HAVING AN INDICATOR MOUNTED ON A REMOVABLE REEL ASSEMBLY
Alvin H. Eli, R.R. 1100, Great Falls, Mont. 59401
Filed Apr. 20, 1983, Ser. No. 486,562
Term of patent 14 years
U.S. Cl. D22—22

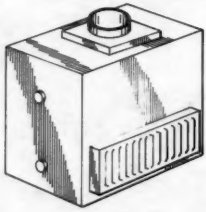


282,273
ICE FISHING BOX HAVING AN INDICATOR MOUNTED ON A REMOVABLE REEL ASSEMBLY
Alvin H. Eli, R.R. 1100, Great Falls, Mont. 59401
Filed Apr. 20, 1983, Ser. No. 486,570
Term of patent 14 years
U.S. Cl. D22—22

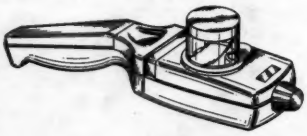


282,274
SPRAY GUN CASING
Arthur N. Buroff, Rahway, N.J., assignor to Spray-All, Inc., Millburn, N.J.
Filed Aug. 15, 1983, Ser. No. 523,332
Term of patent 14 years
U.S. Cl. D23—18

282,275
WASTE HEAT RECOVERY DEVICE
Edwin A. Price, 16001 E. 11th Ave., Aurora, Colo. 80011
Filed Aug. 20, 1982, Ser. No. 409,886
Term of patent 14 years
U.S. Cl. D23—136



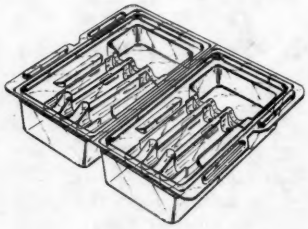
282,276
AMALGAM DISPENSER
Peter A. Basile, Hudson, Ohio, assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Feb. 4, 1983, Ser. No. 463,769
Term of patent 14 years
U.S. Cl. D24—10



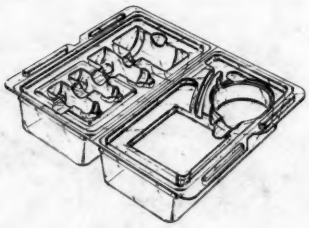
282,277
GUIDE FOR FEMORAL NECK OSTEOTOMY
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Apr. 15, 1983, Ser. No. 485,536
Term of patent 14 years
U.S. Cl. D24—26

282,278
CULTURE SPREADER
Maurice Asa, 1287 66th St., Emeryville, Calif. 94608
Filed Sep. 27, 1983, Ser. No. 536,945
Term of patent 14 years
U.S. Cl. D24—29

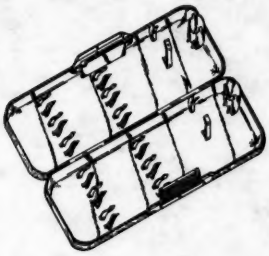
282,279
HINGED CONTAINER WITH COMPONENT INSERTS
Robert D. Holewinski, Lakehurst; Leslie Hamilton, Trenton, and William J. Blatherwick, Hamilton Square, all of N.J., assignors to Johnson & Johnson Dental Products Co., East Windsor, N.J.
Filed Jan. 26, 1983, Ser. No. 460,974
Term of patent 14 years
U.S. Cl. D24—31



282,280
HINGED CONTAINER WITH COMPONENT INSERTS
Robert D. Holewinski, Lakehurst; Leslie Hamilton, Trenton, and William J. Blatherwick, Hamilton Square, all of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Jan. 26, 1983, Ser. No. 460,976
Term of patent 14 years
U.S. Cl. D24—31

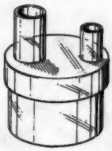


282,281
CASE FOR SYRINGES
Raymond P. Nitzsche, Edison, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed Aug. 22, 1983, Ser. No. 525,524
Term of patent 14 years
U.S. Cl. D24—31

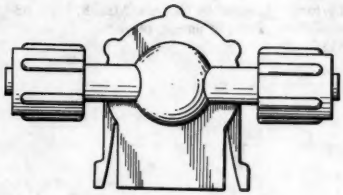


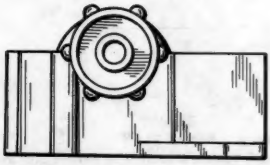
282,282
CARDIOTOMY RESERVOIR WITH FILTER
Milton P. Chernack, Hempstead, N.Y., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.
Filed Jan. 10, 1983, Ser. No. 456,648
Term of patent 14 years
U.S. Cl. D24—51

282,283
SENSOR LINE FITTING FOR A RESPIRATORY SYSTEM
James Weigl, 2241 Chicago Ave., Riverside, Calif. 92507, and Burrell E. Clawson, 823 W. 16th St., Newport Beach, Calif. 92663
Filed Apr. 23, 1982, Ser. No. 371,317
Term of patent 14 years
U.S. Cl. D24—53



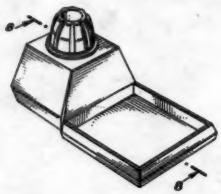
282,284
TRANSDUCER HOUSING ASSEMBLY FOR MONITORING BLOOD PRESSURE AND THE LIKE
Kenneth R. McCord, Menlo Park; James K. Bullock, Burbank, and Henrick K. Gille, West Los Angeles, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 29, 1983, Ser. No. 489,927
Term of patent 14 years
U.S. Cl. D24—53



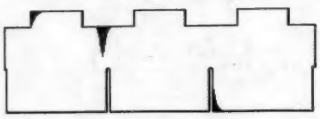


282,285
ASPIRATOR
Aldo Levy, 10, rue Vandrezanne, 75013 Paris, France
Filed Oct. 7, 1983, Ser. No. 540,150
Term of patent 14 years
U.S. Cl. D24—54

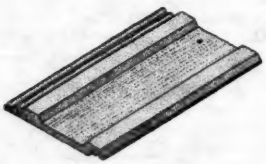
282,286
MEDICAL WASTE STATION WITH HYPODERMIC NEEDLE CUTTER
Richard F. Gianni, Danville, Calif., assignor to Biosafety Systems, Inc., San Diego, Calif.
Filed May 2, 1983, Ser. No. 490,872
Term of patent 14 years
U.S. Cl. D24—99



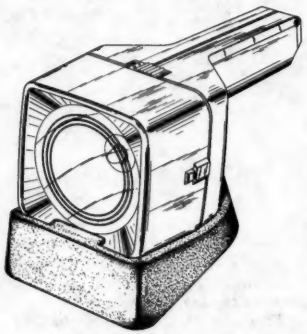
282,287
SHINGLE
David J. McKeagan, Basking Ridge, N.J., and Giuseppe Spinelli, St. Constant, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Filed Nov. 23, 1982, Ser. No. 443,909
Claims priority, application Canada, Mar. 8, 1982, 03-08-82-3
Term of patent 14 years
U.S. Cl. D25—80



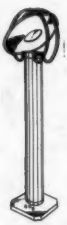
282,288
ROOF TILE
Leon H. Bates, 2807 Vista Palomar, Fairfield, Calif. 94533
Filed Feb. 17, 1983, Ser. No. 467,363
Term of patent 14 years
U.S. Cl. D25—80



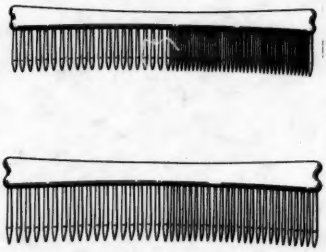
282,289
COMBINED RECHARGEABLE FLASHLIGHT AND RECHARGING STAND THEREFOR
Alain Verdier, Sainte-Foy-Les-Lyon, France, assignor to Black & Decker, Inc., Newark, Del.
Filed Jul. 26, 1983, Ser. No. 517,417
Claims priority, application France, Jan. 26, 1983, 830247
Term of patent 14 years
U.S. Cl. D26—46



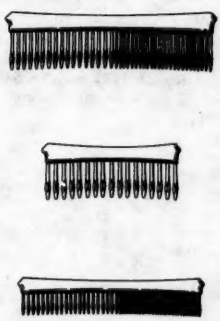
282,290
TABLE LAMP
Tobia Scarpa, Via Campagna 3, Trevignano (Treviso), Italy
Filed Mar. 17, 1983, Ser. No. 476,386
Claims priority, application Italy, Sep. 17, 1982, 7080/82[U]
Term of patent 14 years
U.S. Cl. D26—93



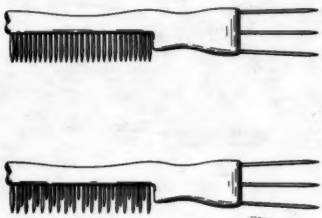
282,291
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,411
Term of patent 14 years
U.S. Cl. D28—21



282,292
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,414
Term of patent 14 years
U.S. Cl. D28—21

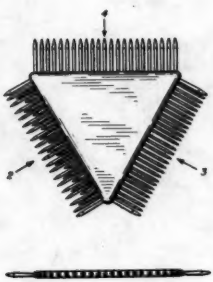


282,293
COMBINED COMB AND HAIR PICK
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,407
Term of patent 14 years
U.S. Cl. D28—25

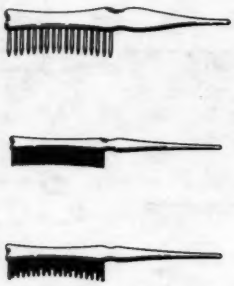


282,294
COMBINED COMB AND HAIR PICK
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,408
Term of patent 14 years
U.S. Cl. D28—25

282,295
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,413
Term of patent 14 years
U.S. Cl. D28—29



282,296
HAIR COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,409
Term of patent 14 years
U.S. Cl. D28—30

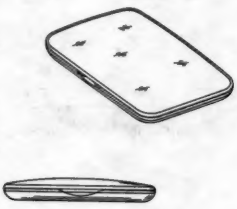


282,297
COMB
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,410
Term of patent 14 years
U.S. Cl. D28—30

282,298
COMB
Aldo J. Mazzaferro, 71 Water St., Leominster, Mass. 01453
Filed Feb. 1, 1984, Ser. No. 575,875
Term of patent 14 years
U.S. Cl. D28—31

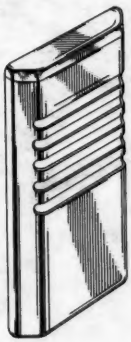
282,299
HAIR LIFT
Franklin D. Harvey, 22 E. Broad St., Richmond, Va. 23219
Filed Jul. 10, 1984, Ser. No. 629,402
Term of patent 14 years
U.S. Cl. D28—31

282,300
COSMETIC CASE
Dieter Bakic, Romerstr. 15, D-8000 Munchen 40, Fed. Rep. of Germany
Filed Nov. 3, 1983, Ser. No. 548,368
Claims priority, application Fed. Rep. of Germany, May 9, 1983, URA 542/83
The portion of the term of this patent subsequent to Apr. 2, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—83



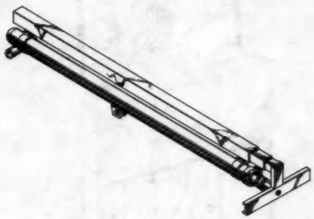
282,301
COSMETIC CONTAINER FOR LIPSTICK AND THE LIKE
Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Sep. 23, 1983, Ser. No. 535,381
Term of patent 14 years
U.S. Cl. D28—85

282,302
SWIMMING POOL SKIMMER
Arturo Reynoso, 27933 Oakmoor, Canyon Country, Calif. 91351, and Julian J. Groger, 25445 Via Alcira, Valencia, Calif. 91355
Filed Mar. 17, 1983, Ser. No. 476,196
Term of patent 14 years
U.S. Cl. D32—32

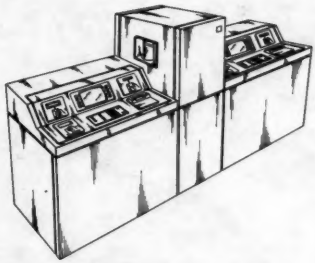


282,303
GOLF BAG CARRIER
Lutz Jessen, Hauptstrasse 11, 8130 Starnberg, Fed. Rep. of Germany
Filed Jan. 24, 1983, Ser. No. 460,279
Term of patent 14 years
U.S. Cl. D34—15

282,304
HYDRAULIC CYLINDER BOOM
William E. Bickley, P.O. Box 120841, Nashville, Tenn. 37212
Filed Apr. 29, 1983, Ser. No. 490,245
Term of patent 14 years
U.S. Cl. D34—36



282,305
AUTOMATIC TELLER MACHINE
Elizabeth A. Kusenberg, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 10, 1983, Ser. No. 550,678
Term of patent 14 years
U.S. Cl. D99—28



282,306

RELIGIOUS CHAPEL OR THE LIKE

John T. Torlone, 37 Orchard St., Englewood, Ohio 45322

Filed Aug. 23, 1982, Ser. No. 410,310

Term of patent 14 years

U.S. Cl. D99—25

282,307

APPARATUS FOR SORTING AND COUNTING BANK NOTES

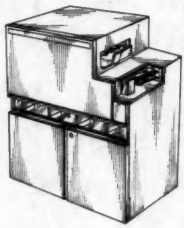
Yoshiaki Nishida, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 19, 1983, Ser. No. 524,597

Claims priority, application Japan, Mar. 8, 1983, 58-9258

Term of patent 14 years

U.S. Cl. D99—28



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TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Allied Corporation: *See—*
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Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., 4,565,154, Cl. 118-410.000.
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van Linden, Jan H. L.; and Whitehead, James S., 4,565,572, Cl. 75-24.000.
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Amaral, Joseph E.: *See—*
Harger, Mark A.; Amaral, Joseph E.; and Blatter, Harold, 4,566,034, Cl. 358-194.100.

Amax Inc.: *See—*
Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, 4,565,573, Cl. 75-77.000.

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Giglia, Robert D.; and Battistelli, Edward A., 4,565,727, Cl. 428-172.000.

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DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.

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Rudy, William J.; and Smith, Dennis E., 4,565,416, Cl. 339-59.00M.

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Brokaw, Adrian P., 4,565,000, Cl. 29-611.000.

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Kokubun, Yoshikazu; and Anazawa, Osamu, 4,565,300, Cl. 221-116.000.

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Backlund, Peter S., to Union Oil Company of California. Coated fertilizer particles. 4,565,564, Cl. 71-28.000.

Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., to Mobil Oil Corporation. Blends of LLDPE, PP and EPDM or EPR for films of improved stiffness, tear and impact strength. 4,565,847, Cl. 525-240.000.

Bains, William R., to Ford Aerospace & Communications Corporation. Guided projectile flight control fin system. 4,565,340, Cl. 244-3.280.

Baji, Toru: *See*—
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.

Baker Drilling Equipment Company: *See*—
Orr, Raymond T., Jr., 4,565,086, Cl. 73-23.000.

Baker, Gary W., to Autodynamics Corporation of America. Wheelchair dockage and storage system. 4,565,482, Cl. 414-462.000.

Baker, Rees T.: *See*—
Yates, David J. C.; and Baker, Rees T., 4,565,683, Cl. 423-447.300.

Bakthavachalam, Nanjappa: *See*—
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Baldwin, Gary L.: *See*—
Hornak, Thomas; and Baldwin, Gary L., 4,565,961, Cl. 323-312.000.

Balke, Roy L.; and Filipowski, Jerome R., to General Electric Company. Everted knitted tube insulation for windings of dynamoelectric machines. 4,565,939, Cl. 310-177.000.

Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., to United States Steel Corporation. Apparatus for suppressing fume from a metal pouring operation. 4,565,353, Cl. 266-147.000.

Ballhaus, Heribert, to GMN Georg Muller Nurnberg GmbH. Magnetic fluid seal. 4,565,379, Cl. 277-25.000.

Balzers AG: *See*—
Koprio, Jurgen, 4,565,158, Cl. 118-726.000.

Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Apparatus for producing diamondlike carbon flakes. 4,565,618, Cl. 204-298.000.

Barbee, Robert B., to Eastman Kodak Company. Containers having improved gas barrier properties. 4,565,851, Cl. 525-437.000.

Barkhurst, David J. Exercise device. 4,565,365, Cl. 272-73.000.

Barmag Barmer Maschinenfabrik AG: *See*—
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,565,524, Cl. 432-59.000.

Barnard, Rodney N.: *See*—
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.

Barnes-Hind, Inc.: *See*—
Koeniger, Erich A., 4,565,198, Cl. 128-305.000.

Barnett, Bernard T., to B & P Barnett Limited. Crossbow with rotatable magazine having open-sided channels. 4,565,182, Cl. 124-25.000.

Barnett, Norton C. Boom supported light fixture. 4,566,058, Cl. 362-430.000.

Barone, Bruno J.; and Bowman, William G., to Denka Chemical Corporation. Maleic anhydride process. 4,565,880, Cl. 549-256.000.

Baross nee Sipocz, Anna: *See*—
Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

Barrett, William H.; and Minn, Andre B., to International Business Machines. Color cathode ray tube with infrared emitting phosphor in screen. 4,565,946, Cl. 313-408.000.

Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." . Sealing device for turbine blades of a turbojet engine. 4,565,492, Cl. 415-175.000.

Bartels, James I., to Honeywell, Inc. Boiler low water sensing system utilizing energy transfer network means for delay. 4,565,930, Cl. 307-118.000.

Barth, Jordan B.: *See*—
Mulvey, Patricia S.; Barth, Jordan B.; and Vellekoop, Linda J., 4,565,692, Cl. 424-57.000.

Bartling, Jerry W.; and Hofstetter, James F., to Timpte Industries. Method and apparatus for providing heating or cooling for a vehicle. 4,565,071, Cl. 62-89.000.

Bartol, Fritz: *See*—
Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, 4,565,730, Cl. 428-204.000.

Barwell Machine and Rubber Group Limited: *See*—
Wills, Peter R.; and Cowley, Richard C., 4,565,512, Cl. 425-190.000.

BASF Aktiengesellschaft: *See*—
Hertel, Otto; Kiefer, Hans; and Arnold, Lothar, 4,565,894, Cl. 568-349.000.
Kropp, Rudolf, 4,565,870, Cl. 546-85.000.
Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, 4,565,771, Cl. 430-307.000.
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,565,565, Cl. 71-92.000.

BASF Farben & Fasern AG: *See*—
Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, 4,565,730, Cl. 428-204.000.

Baskin, Joseph M.; Miller, Gary E.; and Wiesner, Wayne, to Boeing Company, The. Wind powered system for generating electricity. 4,565,929, Cl. 290-44.000.

Basquin, Maurice H.: *See*—
Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., 4,565,021, Cl. 38-137.000.

Batson, David C.: *See*—
Goebel, Franz; Haskins, Timothy B.; and Batson, David C., 4,565,752, Cl. 429-94.000.
Goebel, Franz; Batson, David C.; and Haskins, Timothy B., 4,565,753, Cl. 429-94.000.

Battenfeld Fischer Blasformtechnik GmbH: *See*—
Maier, Rudolf, 4,565,515, Cl. 425-381.000.

Battistelli, Edward A.: *See*—
Giglia, Robert D.; and Battistelli, Edward A., 4,565,727, Cl. 428-172.000.

Batts, John H.; and Garrison, Judd F., to John Thomas Batts, Inc. Shipping hanger. 4,565,309, Cl. 223-96.000.

Bauer, Karl: *See*—
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,565,524, Cl. 432-59.000.

Bayer Aktiengesellschaft: *See*—
Andrews, Peter; Boshagen, Horst; and Kolling, Heinrich, 4,565,888, Cl. 564-179.000.
Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, 4,565,614, Cl. 522-112.000.
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,565,834, Cl. 521-121.000.
Draber, Wilfried; Eue, Ludwig; Santel, Hans-Joachim; and Schmidt, Robert R., 4,565,566, Cl. 71-92.000.
Dunwald, Willi, 4,565,843, Cl. 524-89.000.
Kopp, Richard; and Reichmann, Wolfgang, 4,565,648, Cl. 252-397.000.
Rasshofer, Werner; and Dieterich, Dieter, 4,565,645, Cl. 252-182.000.
Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, 4,565,829, Cl. 514-514.000.
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.

BBC Brown, Boveri & Co., Ltd.: *See*—
Buhler, Karl, 4,566,108, Cl. 373-108.000.

Beam, David L.; and Double, Glen P., to International Business Machines Corp. (IBM). Skew insensitive magnetic read head. 4,566,050, Cl. 360-113.000.

Beatriz, Dulce; and Beatriz, Leonardo. Fabric stretching device. 4,565,020, Cl. 38-102.500.

Beatriz, Leonardo: *See*—
Beatriz, Dulce; and Beatriz, Leonardo, 4,565,020, Cl. 38-102.500.

Becht, Carl T., to Senmed, Inc. Ligator. 4,565,199, Cl. 128-325.000.

Bechtloff, Gert, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Supporting tube of a steep-rise conveyor, especially a vertically elevating conveyor, or a down-feed device. 4,565,286, Cl. 198-861.100.

Beck, Robert K., Jr.: *See*—
Altman, Gary F.; and Beck, Robert K., Jr., 4,565,518, Cl. 425-568.000.

Becker, Floyd W. Dual-wall drill pipe. 4,565,394, Cl. 285-141.000.

Beckman Instruments, Inc.: *See*—
Hatch, Richard G.; and Tepermeister, Gary, 4,565,632, Cl. 210-656.000.

Bed-Check Corporation: *See*—
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., 4,565,910, Cl. 200-85.00R.

Bederman, Seymour, to International Business Machines Corp. Token ring with secondary transmit opportunities. 4,566,097, Cl. 370-89.000.

Bedgood, Douglas H. Aquatic exercising device. 4,565,369, Cl. 272-130.000.

Beech, Jeffrey A.; and Penprase, John N., to Pritchard Sales Company, Inc. Apparatus for processing poultry breasts. 4,564,976, Cl. 17-11.000.

Beecham Group p.l.c.: *See*—
Jackson, Robert J., 4,565,691, Cl. 424-52.000.

Behringwerke Aktiengesellschaft: *See*—
Schmidtberger, Rudolf, 4,565,652, Cl. 260-112.00B.

Behrle, William L. Fishing pole mount. 4,565,025, Cl. 43-21.200.

Beiersdorf Aktiengesellschaft: *See*—
Hofeditz, Wolfgang, 4,565,646, Cl. 252-309.000.
Beierwaltes, William H.: *See*—
Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., 4,565,687, Cl. 424-1.100.
Bekkering, Hendrik M.; and Vulink, Henricus H. M., to Duphar International Research B.V. Automatic injection device. 4,565,543, Cl. 604-135.000.
Bender, Heinz G.: *See*—
Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., 4,565,332, Cl. 242-18.100.
Bendiberica S.A.: *See*—
Bacardit, Juan S., 4,565,115, Cl. 91-375.00A.
Benier B.V.: *See*—
Benier, Johan, 4,565,277, Cl. 198-365.000.
Benier, Johan, to Benier B.V. Dough tray for a pre-proofer. 4,565,277, Cl. 198-365.000.
Benker, Gerhard; and Treiber, Helmut, to Agfa-Gevaert Aktiengesellschaft. Method of and apparatus for copying photographic originals. 4,565,442, Cl. 355-68.000.
Bennett, Charles O. Safety flag. 4,565,152, Cl. 116-50.000.
Berg, Harvey F., to Deltec Systems, Inc. Locking mechanism for a drug delivery system. 4,565,542, Cl. 604-131.000.
Berge, Odd; and Hovland, Helge, to Stord Bartz A/S. Process for the production of fodder and fat from animal raw materials. 4,565,709, Cl. 426-641.000.
Bergelin, Klaus: *See*—
ITT Industries, Inc.; Weiler, Rolf; and Bergelin, Klaus, 4,565,066, Cl. 60-533.000.
Bergeron, Raymond J., Jr., to University of Florida. Synthesis of parabactin and homologs thereof. 4,565,874, Cl. 548-239.000.
Bergmark, Nils R. Drying device for shower space. 4,564,963, Cl. 4-597.000.
Bergwerksverband GmbH: *See*—
Kruse, Dirk, 4,565,605, Cl. 202-139.000.
Berkan, Ronald R., to Action Pact, Inc. Sprinkler systems. 4,565,323, Cl. 239-230.000.
Berkelder, Wilhelm H., to Apparatenfabriek ATAG B.V. Gas burner. 4,565,523, Cl. 431-354.000.
Berlebner, James A.; and Reifel, Charles J., to Penta-Pak Inc. Computerized combination weigher with preset optimum weigher discharge. 4,565,253, Cl. 177-1.000.
Bernhard, Horst, to Merck Patent Gesellschaft mit beschrankter Haftung. Nacreous pigments having improved light fastness, their preparation and use. 4,565,581, Cl. 106-308.00B.
Bernhardt & Frederick Co., Inc.: *See*—
Giebeler, Bernhardt F., 4,565,213, Cl. 137-494.000.
Berning, Peter H.: *See*—
Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., 4,565,719, Cl. 428-34.000.
Berol Kemi AB: *See*—
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.
Berry, Brian E., to Uniset Corporation. Powder actuated tool with safety. 4,565,312, Cl. 227-8.000.
Bertsch, Gotthilf, to Maschinenfabrik Sulzer-Ruti AG. Weaving machine. 4,565,225, Cl. 139-434.000.
Bespalova, Zhanna D.: *See*—
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.
Best, David E.: *See*—
Thomas, Roger F.; and Best, David E., 4,565,867, Cl. 544-201.000.
Beurskens, Johannes H. H.; and Winkelmolen, Wilhelmus H. F., to U.S. Philips Corporation. Electric lamp. 4,565,944, Cl. 313-318.000.
Bewick, David W., to Imperial Chemical Industries PLC. Process for producing optically active aryloxypropionic acids and derivatives thereof useful as herbicides. 4,565,782, Cl. 435-122.000.
Bilcon Co., Ltd.: *See*—
Sanuga, Fumiwo, 4,566,109, Cl. 377-2.000.
Bilodeau, Peter R.; and Bilodeau, Theodore W. Marking and measuring instrument. 4,565,012, Cl. 33-458.000.
Bilodeau, Theodore W.: *See*—
Bilodeau, Peter R.; and Bilodeau, Theodore W., 4,565,012, Cl. 33-458.000.
Bio Mabuchi Co. Ltd.: *See*—
Mabuchi, Kenichi, 4,565,189, Cl. 128-49.000.
Biomeasure, Inc.: *See*—
Kim, Sun H.; and Moreau, Jacques-Pierre, 4,565,815, Cl. 514-246.000.
Biro, Ladislao J., to Biro, Ladislao Jose. Molecular and isotopic fractionating process and apparatus. 4,565,556, Cl. 55-460.000.
Biro, Ladislao Jose: *See*—
Biro, Ladislao J., 4,565,556, Cl. 55-460.000.
Bitsch, Harald: *See*—
Hasselmann, Heinz; Kunze, Volkmar; and Bitsch, Harald, 4,565,352, Cl. 254-344.000.
Bitter, Lowell E.; and Lundgren, Bryan L., to Donnelly Corporation. Crack detector for electrically conductive windshield. 4,565,919, Cl. 219-509.000.
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, to Taprogge Gesellschaft mbH. Backflow-type self-cleaning filter. 4,565,631, Cl. 210-333.100.
Biziere, Kathleen: *See*—
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,565,814, Cl. 514-228.000.
Black, Mervin R.: *See*—
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., 4,565,964, Cl. 324-51.000.
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., to General Mills, Inc. Pudding mix. 4,565,708, Cl. 426-579.000.
Blaker, David G.: *See*—
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., 4,565,910, Cl. 200-85.00R.
Blaker, Robert D.: *See*—
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., 4,565,910, Cl. 200-85.00R.
Bland, Gerald F., to Outboard Marine Corporation. Water pump location for marine propulsion device. 4,565,534, Cl. 440-88.000.
Blatter, Harold: *See*—
Harger, Mark A.; Amaral, Joseph E.; and Blatter, Harold, 4,566,034, Cl. 358-194.100.
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, to Deutsche Star Kugelhalter GmbH. Double nut and method of forming the double nut. 4,564,993, Cl. 29-434.000.
Blaurock, Werner: *See*—
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.
Bloechl, Hanns; and Schnall, Guenther, to Agfa-Gevaert Aktiengesellschaft. Device for exposing and developing a light-sensitive material. 4,565,440, Cl. 355-27.000.
Blohm & Voss AG: *See*—
Spengel, Heinz F. J., Sr., 4,565,292, Cl. 212-232.000.
Blok, Lodewijk: *See*—
Needs, Howard C.; and Blok, Lodewijk, 4,565,756, Cl. 430-7.000.
Blomberger Holzindustrie, B. Hausmann GmbH & Co, KG: *See*—
Schulte, Gerhard, 4,565,597, Cl. 156-250.000.
Bloore, Frederick W.; and Seaman, Peter H., to Hotfoil Limited. Heat regulating sensor tape. 4,565,455, Cl. 374-164.000.
Bocchini, William R.: *See*—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.
Boeing Company, The: *See*—
Baskin, Joseph M.; Miller, Gary E.; and Wiesner, Wayne, 4,565,929, Cl. 290-44.000.
Whitener, Philip C., 4,565,595, Cl. 156-156.000.
Boettcher, Marlon, to Gunderson Clinic. Isokinetic exercise and monitoring machine. 4,565,368, Cl. 272-129.000.
Bogossian, Armen: *See*—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.
Bohm, Horst: *See*—
Stahl, Bernhard; and Bohm, Horst, 4,565,357, Cl. 269-32.000.
Bohme, August E. Remote release deep trolling system. 4,565,026, Cl. 43-43.120.
Bolger, Thomas V.: *See*—
Lewis, Henry G., Jr.; and Bolger, Thomas V., 4,566,028, Cl. 358-21.00R.
Bollag, Werner; Mayer, Hans J.; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Retinoid carbohydrates. 4,565,863, Cl. 536-18.200.
Bonerb, Timothy C., to Bonerb, Vincent C., a part interest. Method and apparatus for causing caking material to flow in bins. 4,565,307, Cl. 222-386.500.
Bonerb, Vincent C.: *See*—
Bonerb, Timothy C., 4,565,307, Cl. 222-386.500.
Booij, Johannes, to Innus Industrial Nuclear Services S.A. Apparatus for cleaning a steam generator by means of a high-pressure lance. 4,565,206, Cl. 134-112.000.
Borbe, Harald: *See*—
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.
Borg-Warner Corporation: *See*—
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, 4,565,957, Cl. 318-723.000.
Boron, Joseph J., to Midwest Instrument Co., Inc. Molten metal pin sampler. 4,565,101, Cl. 73-864.570.
Bortolotti, Vanes. Mutual and multi-restrained fixing fender. 4,565,147, Cl. 114-219.000.
Boshagen, Horst: *See*—
Andrews, Peter; Boshagen, Horst; and Kolling, Heinrich, 4,565,888, Cl. 564-179.000.
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., to United States of America, Army. High performance liquid chromatography (HPLC) analysis of sulfur mustards and their decomposition by-products by derivatization. 4,565,787, Cl. 436-120.000.
Boston University, Trustees of: *See*—
Franzblau, Carl; Faris, Barbara A.; and Civerchia-Perez, Linda, 4,565,784, Cl. 435-240.000.
Botar, Sandor: *See*—
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Boudot, Jean E.; and Mazeau, Jean P., to Corning Glass Works. Glasses for ophthalmic applications. 4,565,791, Cl. 501-56.000.

Boudot, Marianne: *See—*
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Bould, Fred, to Westinghouse Electric Corp. Drawout switchgear apparatus with retractable shutter mechanism for terminal stabs. 4,565,908, Cl. 200-50.0AA.

Boulenouar, Abdelhamid: *See—*
Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, 4,566,105, Cl. 371-37.000.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D., 4,565,220, Cl. 137-835.000.

Bowman, William G.: *See—*
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Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, to International Computers Limited. Testing digital electronic circuits. 4,566,104, Cl. 371-15.000.

Brandes, Karlheinz K.: *See—*
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,565,800, Cl. 502-200.000.

Brandes, Wilhelm: *See—*
Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, 4,565,829, Cl. 514-514.000.

Braun, David L.: *See—*
Liggett, Paul E.; and Braun, David L., 4,565,729, Cl. 428-201.000.

Brautigam, Peter F., to Deere & Company. Seat holdup mechanism. 4,565,407, Cl. 297-335.000.

Brennan, Michael F.; and Kauffman, Harold L., to Armstrong World Industries, Inc. Liquid treating apparatus. 4,565,077, Cl. 68-158.000.

Brennsteiner, Ernst; and Scholz, Dieter, to Hilti Aktiengesellschaft. Drill for hand-held drilling devices. 4,565,472, Cl. 408-226.000.

Brian, Michael, to Rockwell International Corporation. Dynamic strobe timing circuitry for A/D conversion apparatus. 4,565,993, Cl. 340-347.0AD.

Bricker, Jeffery C.: *See—*
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.

Brille, Maurice. Connecting rod bearings for a volumetric piston chamber machine. 4,565,103, Cl. 74-60.000.

Briner, Emil: *See—*
Stalder, Herbert; and Briner, Emil, 4,565,063, Cl. 57-328.000.

Brinker, Alfred: *See—*
Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, 4,565,203, Cl. 131-283.000.

Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, to Hoesch Aktiengesellschaft. Hydraulic press for pressing mats of plastic material reinforced with glass fibers. 4,565,517, Cl. 425-451.200.

Briscoe, James E.: *See—*
Penny, Glenn S.; and Briscoe, James E., 4,565,639, Cl. 252-8.55B.

British Aerospace PLC: *See—*
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British Petroleum Company p.l.c., The: *See—*
Gane, Brian R.; and Hall, Antony H. P., 4,565,897, Cl. 585-415.000.

British Telecommunications: *See—*
Marr, Donald, 4,565,593, Cl. 156-64.000.

Brodasky, Thomas F.: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.

Brokaw, Adrian P., to Analog Devices, Incorporated. Matching of resistor sensitivities to process-induced variations in resistor widths. 4,565,000, Cl. 29-611.000.

Brookshire, Daniel A., to Motorola, Inc. Parasitic insensitive autozeroed operational amplifier. 4,565,971, Cl. 330-9.000.

Broome, Stephanie A.: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,565,785, Cl. 435-317.000.

Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., to Genus, Inc. Method and apparatus for deposition of tungsten silicides. 4,565,157, Cl. 118-719.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.

Brown, Robert G.: *See—*
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.

Brown, Robert R. Marksman's collapsible, portable, shooting bench and table assembly. 4,565,403, Cl. 297-3.000.

Browne, Ronald O.; and Hertzberg, William E., to Browne, Ronald O. Pastry processor to divide pastries and insert separators. 4,565,053, Cl. 53-516.000.

Brunke, Michael: *See—*
Wehrfritz, Heinz; and Brunke, Michael, 4,565,378, Cl. 277-3.000.

Brunn, Klaus; and Polster, Walter, to Siemens Aktiengesellschaft. X-Ray diagnostic system for radiographs. 4,566,115, Cl. 378-097.000.

Brunn, Otto, to International Standard Electric Corporation. Socket and base for picture tubes. 4,565,420, Cl. 339-193.00P.

Brush Wellman Inc.: *See—*
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,565,586, Cl. 148-12.70C.

Bryant, Clyde C. Internal combustion engine. 4,565,167, Cl. 123-70.00R.

Buchner, Delmer B. Cartridge assembly. 4,565,131, Cl. 102-444.000.

Buck, Manfred; Schmid, Wolfgang; and Wanner, Karl, to Robert Bosch GmbH. Drive-in apparatus particularly an electric tacker for driving in fasteners. 4,565,313, Cl. 227-131.000.

Buckley, Elizabeth. Hand-cleaning device. 4,564,968, Cl. 15-21.00R.

Buckley, Kenneth: *See—*
Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, 4,565,573, Cl. 75-77.000.

Budacolor Festekgyar: *See—*
Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

Buddy L. Corporation: *See—*
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,565,538, Cl. 446-427.000.

Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, to Bayer Aktiengesellschaft. Polymer mixtures and co-vulcanizates produced therefrom. 4,565,614, Cl. 522-112.000.

Buhler, Karl, to BBC Brown, Boveri & Co., Ltd. Bottom-electrode arrangement for a direct-current arc furnace. 4,566,108, Cl. 373-108.000.

Buist, Kevin S.: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Bulgakov, Sergei A.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Buma, Shuuichi, to Toyota Jidosha Kabushiki Kaisha. Apparatus for indicating a range position for an automatic transmission installed in a vehicle. 4,565,151, Cl. 116-28.100.

Bunning, Ernst, to Maremont Corporation. Automatic weapon charging handle and bolt latch. 4,565,113, Cl. 89-1.400.

Burchett, Barry L. Method and apparatus for training a human by feedback enhanced learning. 4,565,527, Cl. 434-248.000.

Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., to Olin Corporation. Cartridge strip magazine for powder-actuated tools. 4,565,114, Cl. 89-35.010.

Burgmaster - Houdaille, Inc.: *See—*
Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.

Burke, Philip E.: *See—*
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Burkhalter, John F.: *See—*
Sutton, David L.; and Burkhalter, John F., 4,565,578, Cl. 106-87.000.

Burkhardt, Rudolf; and Hass, Hansjurgen, to Dynamit Nobel AG. Pollutant-resistant sealing composition. 4,565,577, Cl. 106-85.000.

Burr, James B.: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., to Kollmorgen Technologies Corporation. Method and apparatus for testing of electrical interconnection networks. 4,565,966, Cl. 324-73.0PC.

Burress, George T., to Mobil Oil Corporation. Iron oxide catalysts containing copper and zinc compounds and process for para-ethyltoluene dehydrogenation. 4,565,899, Cl. 585-445.000.

Burroughs Corporation: *See—*
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.
Ragle, Herbert U., 4,565,927, Cl. 250-560.000.

Buszard, David L.; and Dellar, Richard J., to Ciba-Geigy AG. Fire retardant composition. 4,565,833, Cl. 521-107.000.

Butler, Donald F.; and Shelton, Mark E. Stereo headset system for use in a wet environment. 4,565,258, Cl. 181-129.000.

Butter, Jahannes A.M.: *See—*
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.

Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., to Bayer Aktiengesellschaft. Stabilizer-containing reactive components for pu-foams, new stabilizers and a process for producing these stabilizers. 4,565,834, Cl. 521-121.000.

Cahalan, Patrick T.; and Schwinghammer, Michelle A., to Medtronic, Inc. Method of producing combination ion selective sensing electrode. 4,565,666, Cl. 264-267.000.

Cahill, Lysle D., to Coulter Systems Corporation. Electrophotographic imaging apparatus by variably placing pixel elements. 4,566,042, Cl. 358-300.000.

Calcote, Hartwell F.: *See—*
Olson, Douglas B.; and Calcote, Hartwell F., 4,565,969, Cl. 324-468.000.

Cameron, Mick G., to Dana Corporation. Friction clutch element. 4,565,274, Cl. 192-107.00R.

Campbell, David L., to Advanced Micro Devices, Inc. Interruptable voltage-controlled oscillator and phase-locked loop using same. 4,565,976, Cl. 331-57.000.

Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., to LOR, Inc. Borehole operating tool with fluid circulation through arms. 4,565,252, Cl. 175-269.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., 4,565,964, Cl. 324-51.000.
Canadian Patents & Development Limited: *See—*
Inculet, Ion I., 4,565,318, Cl. 239-3.000.
Canon Kabushiki Kaisha: *See—*
Fukahori, Hidehiko; Fujino, Masahisa; and Satoh, Toshihiko, 4,565,432, Cl. 354-173.110.
Kadosawa, Tsuneaki, 4,566,036, Cl. 358-210.000.
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 4,565,761, Cl. 430-83.000.
Kato, Masatake, 4,565,433, Cl. 354-201.000.
Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.
Minoura, Kazuo, 4,565,421, Cl. 350-6.800.
Mitsuhashi, Yasuo; and Uchiyama, Masaki, 4,565,766, Cl. 430-126.000.
Miura, Genmei; Konno, Akira; and Konishi, Motofumi, 4,566,002, Cl. 340-727.000.
Nakahara, Toshiaki; Ohsaki, Ichiro; and Ushiyama, Hisayuki, 4,565,764, Cl. 430-111.000.
Nishide, Katsuhiko, 4,565,737, Cl. 428-321.500.
Notagashira, Hidehumi, 4,565,434, Cl. 354-286.000.
Tamura, Yasuyuki, 4,566,043, Cl. 358-300.000.
Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,565,763, Cl. 430-109.000.
Canron Corp.: *See—*
Moore, Roy J., 4,565,133, Cl. 104-7.00B.
Canterino, Peter J.: *See—*
Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., 4,565,847, Cl. 525-240.000.
Cardin, William J.; Gulla, Michael; and Newton, Charles L., to Shiplay Company Inc. Apparatus and method for automatically maintaining an electroless plating bath. 4,565,575, Cl. 106-1.220.
Carignan, Forest J., to Advanced Mechanical Technology, Inc. Burner ignition system. 4,565,519, Cl. 431-46.000.
Carl Freudenberg, Firma: *See—*
Stein, Karl H.; and Krull, Manfred, 4,565,736, Cl. 428-286.000.
Carl-Zeiss-Stiftung: *See—*
Schilling, Albert; and Schob, Wolfgang, 4,565,427, Cl. 350-530.000.
Carlisle, G. Ross. Indicia display means. 4,565,023, Cl. 40-486.000.
Carobbi, Renato: *See—*
Filippini, Andrea; and Carobbi, Renato, 4,565,582, Cl. 127-46.100.
Carpenter, James H., Jr.; and Mullins, Ronald L., to Kennecott Corporation. Impeller even discharge apparatus. 4,565,035, Cl. 51-434.000.
Carrier Corporation: *See—*
Drucker, Alan S.; Kwok, King H.; and Whipple, Charles E., 4,565,075, Cl. 62-507.000.
Raymond, Glendon A., 4,565,070, Cl. 62-81.000.
Carter, Malcolm A.: *See—*
Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., 4,564,971, Cl. 15-250.350.
Casco Products Corporation: *See—*
Lupoli, Peter J.; and Westover, Brooke N., 4,565,991, Cl. 340-52.00R.
Casdade Systems Incorporated: *See—*
Kraft, Chrispin S., 4,566,087, Cl. 369-34.000.
Casey, Liam M.: *See—*
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., 4,566,098, Cl. 370-89.000.
Cassano, Anthony A., to Air Products and Chemicals, Inc. Air separation with temperature and pressure swing. 4,565,685, Cl. 423-579.000.
Cassat, Robert, to Rhone-Poulenc Recherches. Metallization of electrically insulating polyimide/aromatic polyamide film substrates. 4,565,606, Cl. 204-20.000.
Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, to Lehner A.G. Derivatives of biliary acids, process for the production thereof and pharmaceutical compositions containing the same. 4,565,810, Cl. 514-182.000.
Castera, Jean-Paul; and Dupont, Jean-Marie, to Thomson-CSF. Filter device utilizing magnetostatic waves. 4,565,984, Cl. 333-202.000.
Castle, Thomas M.: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.
Castleberry, Kenneth B.; and McDonald, Norman L. Energy efficient thermosyphoning spa heater system. 4,564,962, Cl. 4-543.000.
Cates, Guy L.: *See—*
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.
Cavalli, Alfredo. Steam iron stand with pivotable water reservoir. 4,565,019, Cl. 38-77.600.
Cavender, Patricia L., to FMC Corporation. Imidazole plant growth regulators. 4,565,875, Cl. 548-336.000.
CBL Consolidated Ltd. BS: *See—*
Smits, Philippus R. J., 4,565,724, Cl. 428-138.000.
CEM Corporation: *See—*
Collins, Michael J.; and Hargett, Wyatt P., Jr., 4,565,669, Cl. 422-78.000.
Central Glass Company, Limited: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.
Chakkaw, Somkiat: *See—*
Jeensalute, Thipthep; and Chakkaw, Somkiat, 4,565,500, Cl. 417-53.000.
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., to Vickers PLC. Photoconductive compositions sensitive to both laser light and tungsten halide light. 4,565,757, Cl. 430-83.000.
Chang, John C.; and Williams, Kathryn L., to Minnesota Mining and Manufacturing Company. Blend of fluorochemical guanidines and poly(oxyalkylenes). 4,565,641, Cl. 252-8.750.
Chapin, William L. Method and apparatus for animating illuminated signs and displays. 4,565,022, Cl. 40-442.000.
Chaplin, George B. B.; and Smith, Roderick A., to Sound Attenuators Limited. Method of and apparatus for cancelling vibrations from a source of repetitive vibrations. 4,566,118, Cl. 381-71.000.
Chapman Manufacturing Company, Inc.: *See—*
Rockwood, Richard D.; and Ruskin, Bernard J., 4,565,395, Cl. 285-282.000.
Charles, Paul A. S., to Ingersoll Milling Machine Company, The. Method of generating involute tooth forms with a milling cutter. 4,565,474, Cl. 409-51.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Kumar, Kaplesh, 4,565,686, Cl. 423-644.000.
Charmilles Technologies, S.A.: *See—*
Girardin, Roger, 4,565,915, Cl. 219-69.00W.
Charnock, Graham: *See—*
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.
Chavdarian, Charles G.; and Kanne, David B., to Stauffer Chemical Co. S-Aralkyltrithiophosphonate insecticides. 4,565,809, Cl. 514-112.000.
Check, Frank T., Jr., to Pitney Bowes Inc. Electronic postage meter having redundant memory. 4,566,106, Cl. 371-67.000.
Chen, York, to Contax Sports, Inc. Construction for an athletic shoe and process of making. 4,564,966, Cl. 12-146.00B.
Chevron Research Company: *See—*
King, William F., 4,565,812, Cl. 514-189.000.
Chiang, Bin Y.: *See—*
Arciszewski, Henry; Porzio, Linda A.; and Chiang, Bin Y., 4,565,089, Cl. 78-82.000.
Chino, Kunitake: *See—*
Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, 4,565,673, Cl. 423-112.000.
Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara R.T.: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.
Chiou, George C. Y., to Texas A&M University System, The. Method and ophthalmic composition for treating ocular hypertension and glaucoma with butyrophenones. 4,565,821, Cl. 514-327.000.
Chiyoda Chem. Engineering & Construction Co. Ltd.: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.
Chlumecky, Nicholas, to Commercial Shearing, Inc. Cribbing. 4,565,469, Cl. 405-288.000.
Cho, Ryokche: *See—*
Kobayashi, Kazusuke; and Cho, Ryokche, 4,565,840, Cl. 524-8.000.
Choquette, Andre, to Uraken Canada Limited. Steam generation. 4,565,161, Cl. 122-32.000.
Choung, Younho; and Goudey, Kenneth R., to Ford Aerospace & Communications Corporation. Wide-band microwave signal coupler. 4,566,012, Cl. 343-359.000.
Christensen, Burton G.: *See—*
Andrus, W. Alexander; Christensen, Burton G.; and Heck, James V., 4,565,808, Cl. 514-80.000.
Christianson, Tony. Foot holding device for hanging upside-down. 4,565,370, Cl. 272-145.000.
Christophersen, James C.: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.
Chu, Benjamin, to Research Foundation of State University of New York, The. Scattering cells. 4,565,446, Cl. 356-246.000.
Chubu Industries, Inc.: *See—*
Himi, Kohei, 4,565,329, Cl. 241-95.000.
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., to Brush Wellman Inc. Processing of copper alloys. 4,565,586, Cl. 148-12.70C.
Ciba-Geigy AG: *See—*
Buszard, David L.; and Dellar, Richard J., 4,565,833, Cl. 521-107.000.
Forte, Eddy, 4,565,775, Cl. 430-390.000.
Graber, Alfred, 4,565,322, Cl. 239-223.000.
Ciba-Geigy Corp.: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,565,887, Cl. 564-85.000.
Lohmann, Dieter; and Wyler, Siegfried, 4,565,873, Cl. 548-110.000.
Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.
Cii Honeywell Bull (Societe Anonyme): *See—*
Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, 4,566,105, Cl. 371-37.000.

Cirkot, David M.: *See—*
Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., 4,565,029, Cl. 49-25.000.
Cischke, Michael R. Post driving device. 4,565,251, Cl. 173-128.000.
Civerchia-Perez, Linda: *See—*
Franzblau, Carl; Faris, Barbara A.; and Civerchia-Perez, Linda, 4,565,784, Cl. 435-240.000.
Claas OHG: *See—*
Heidjann, Franz, 4,565,056, Cl. 56-14.400.
Claassen, Pamela L.: *See—*
Williams, James E., Jr.; and Claassen, Pamela L., 4,565,716, Cl. 427-216.000.
Clairol Incorporated: *See—*
Skovdal, Jorgen, 4,565,204, Cl. 132-39.000.
Clapp, Joseph E.: *See—*
Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, 4,565,573, Cl. 75-77.000.
Clark, John I.: *See—*
Stokes, John H.; Clark, John I.; and Maxwell, Charles E., 4,565,995, Cl. 340-571.000.
Clasky, Richard; and Vogl, Wilfred, to Clasky, Richard. Semi-submergible spherical residential structure. 4,565,149, Cl. 114-264.000.
Clauson, Melvil B.; and Wagner, John R., Jr., to Mobil Oil Corporation. Oriented multi-layer heat sealable film. 4,565,739, Cl. 428-349.000.
Clegg, John E. Reciprocating reverse-circuit switch. 4,565,906, Cl. 200-1.00V.
Clelford, Douglas H.: *See—*
Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., 4,566,101, Cl. 371-5.000.
Clifford, Douglas M.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.
Close, Leo R., to Israel, Mrs. Lawrence. Range limited coherent frequency doppler surveillance system. 4,565,996, Cl. 340-572.000.
Clowe, Henry W. Tapered container labeling apparatus and method. 4,565,596, Cl. 156-215.000.
Clunn, Robert H., to Texas Instruments Incorporated. Apparatus and method for pattern location. 4,566,125, Cl. 382-48.000.
Coates, Fredrica. Combination carrying bag for infant accessories and diapering station. 4,566,130, Cl. 383-15.000.
Coleman, Leonard John: *See—*
Hardie, Laurie S., 4,565,188, Cl. 128-24.200.
Colgate-Palmolive Company: *See—*
Marschner, Frank W., 4,565,693, Cl. 424-67.000.
Mulvey, Patricia S.; Barth, Jordan B.; and Vellekoop, Linda J., 4,565,692, Cl. 424-57.000.
Collins, Bruce H.; and Jurgens, Heinrich J. W. Combustible particulate fuel heater. 4,565,184, Cl. 126-368.000.
Collins, John D., to Raytheon Company. Processing arrangement for pulse compression radar. 4,566,010, Cl. 343-17.2PC.
Collins, Michael J.; and Hargett, Wyatt P., Jr., to CEM Corporation. Microwave ashing apparatus. 4,565,669, Cl. 422-78.000.
Collins, Peter: *See—*
King, Allen; Collins, Peter; and Goldman, Jay, 4,565,999, Cl. 340-706.000.
Combustion Engineering, Inc.: *See—*
Deve, Vagn, 4,565,328, Cl. 241-65.000.
Commercial Shearing, Inc.: *See—*
Chlumecky, Nicholas, 4,565,469, Cl. 405-288.000.
Comminge, Hubert; Cunningham, John E.; and White, Howard R., Jr., to United States of America, Army. Track and road wheel assemblies for tracked vehicles. 4,565,412, Cl. 305-53.000.
Commonwealth of Australia, The: *See—*
Seymour, Robert S., 4,565,598, Cl. 156-601.000.
Commtech International: *See—*
Rambo, William R., 4,566,133, Cl. 455-277.000.
Connor, John A., to Kaama Marine Engineering, Inc. Stern drive. 4,565,532, Cl. 440-57.000.
Conoco Inc.: *See—*
Zielke, Clyde W.; and Wu, Muh-Cheng M., 4,565,678, Cl. 423-235.000.
Constructiewerkhuizen De Mets N.V.: *See—*
De Mets, Albert, 4,565,509, Cl. 425-101.000.
Contax Sports, Inc.: *See—*
Chen, York, 4,564,966, Cl. 12-146.00B.
Conti, Allen C.; and Conti, Armand R., to Arnco Corporation. Method for installing cable using an inner duct. 4,565,351, Cl. 254-134.3FT.
Conti, Armand R.: *See—*
Conti, Allen C.; and Conti, Armand R., 4,565,351, Cl. 254-134.3FT.
Continental Plastic Containers, Inc.: *See—*
Szajna, John L.; and Weissenstein, Harry, 4,565,516, Cl. 425-540.000.
Contraves AG: *See—*
Arndt, Klaus; and Sanvido, Saverio, 4,565,428, Cl. 350-579.000.
Cook, John S., to Mattel, Inc. Multiple-use shaft for toy. 4,565,539, Cl. 446-462.000.
Cook, Melvin J. Livestock treatment system. 4,565,160, Cl. 119-159.000.
Cooper, Edward, to Power-Matic, Inc. AC Line voltage regulator with controlled energy dispenser. 4,565,958, Cl. 323-248.000.
Cooper, Hugh E.: *See—*
Hollonbeck, Gary G.; and Cooper, Hugh E., 4,565,409, Cl. 297-411.000.
Corley, Larry S., to Shell Oil Company. Apparatus for impregnation of reinforcing fibers. 4,565,153, Cl. 118-405.000.
Corning Glass Works: *See—*
Boudot, Jean E.; and Mazeau, Jean P., 4,565,791, Cl. 501-56.000.
Correa, Paul E.; and Riley, Dennis P., to Procter & Gamble Company, The. Oxidation of tertiary amines using octacyanomolybdate or iron (III) salts as catalysts. 4,565,891, Cl. 564-298.000.
Corrigan, James L.; and Schouten, Gerard M., to Armstrong World Industries, Inc. Display rack. 4,565,290, Cl. 211-41.000.
Cosman, Eric R. Universal lesion and recording electrode system. 4,565,200, Cl. 128-642.000.
Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, to Rhone-Poulenc Sante. Process for the preparation of 4-hydroxy-2,4,6-trimethyl-2,5-cyclohexadienone. 4,565,895, Cl. 568-362.000.
Cotton, Armand. Method of producing biogas and compost. 4,565,552, Cl. 48-197.00A.
Coulter Electronics, Inc.: *See—*
Kolber, Steven, 4,566,110, Cl. 377-10.000.
Coulter Systems Corporation: *See—*
Cahill, Lysle D., 4,566,042, Cl. 358-300.000.
Cowley, Richard C.: *See—*
Wills, Peter R.; and Cowley, Richard C., 4,565,512, Cl. 425-190.000.
CP Schmidt-Verpackungswerk GmbH & Co., KG: *See—*
Wagner, Heinz; and Schieler, Karl, 4,565,315, Cl. 229-17.00R.
Crabtree, Robert P., to International Business Machines Corp. Concurrent multi-lingual use in data processing systems. 4,566,078, Cl. 364-900.000.
Crainich, Lawrence, to Design Standards Corporation. Ski. 4,565,386, Cl. 280-602.000.
Crambes, Michel, to Elf France. Process and apparatus for the detection of changes of composition in a medium with the aid of ultrasound. 4,565,088, Cl. 73-61.10R.
Crane, Thomas W., to United States of America, Energy. Method and apparatus for determining the content and distribution of a thermal neutron absorbing material in an object. 4,565,926, Cl. 250-390.000.
Cranston Ky: *See—*
Cranston, W. Charles, 4,565,399, Cl. 294-74.000.
Cranston, W. Charles, to Cranston Ky. Disposable lifting loop and method of lifting a cargo load therewith. 4,565,399, Cl. 294-74.000.
Crawford, Leslie A. Moisture impervient barrier and method for making same. 4,565,468, Cl. 405-270.000.
Crawford, Patrick J.; and Klement, Larry G., to Timbco Hydraulics Inc. Device for handling material. 4,565,486, Cl. 414-729.000.
Creative Products Resource Associates, Ltd.: *See—*
Smith, James A.; and Murphy, Betty J., 4,565,644, Cl. 252-92.000.
Cribb, W. Raymond: *See—*
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,565,586, Cl. 148-12.70C.
Criceram: *See—*
Ricard, Jean, 4,565,600, Cl. 156-608.000.
Croll, Lionel. Animal simulating three dimensional archery target and method of manufacture. 4,565,376, Cl. 273-408.000.
Crowell, Jonathan C.: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.
Crucible Materials Corporation: *See—*
Narasimhan, Kalatur S. V. L., 4,565,587, Cl. 148-31.570.
Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Grego, Giorgo, 4,565,449, Cl. 356-361.000.
CTBA Associates: *See—*
Nickerson, Rand B.; and Welsh, Russell J., 4,566,030, Cl. 358-84.000.
Cullen, Ralph A. W. Beam splitter. 4,565,426, Cl. 350-401.000.
Culture-Tek: *See—*
Malinoff, Don W., 4,565,100, Cl. 73-863.320.
Cummings, Leslie L., deceased; and by Cummings, Mildred, executrix. Chemical injection valve. 4,565,215, Cl. 137-538.000.
Cummings, Mildred, executrix: *See—*
Cummings, Leslie L., deceased; and Cummings, Mildred, executrix, 4,565,215, Cl. 137-538.000.
Cummins Engine Company, Inc.: *See—*
Roettgen, Leslie A.; and Israel, Kenneth W., 4,565,177, Cl. 123-563.000.
Cunningham, John E.: *See—*
Comminge, Hubert; Cunningham, John E.; and White, Howard R., Jr., 4,565,412, Cl. 305-53.000.
Cunningham, William L.: *See—*
Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., 4,565,252, Cl. 175-269.000.
Cuozzo, Anthony: *See—*
Achee, John D.; and Cuozzo, Anthony, 4,565,458, Cl. 384-561.000.
Curtis, Jeff K.; and Michaely, William J., to Stauffer Chemical Company. Arylacrylaryl amides herbicidal compounds and methods of use. 4,565,570, Cl. 71-105.000.
Custom-Bilt Machinery, Inc.: *See—*
Faltin, Hans G., 4,565,363, Cl. 271-315.000.
Dac Engineering Co., Ltd.: *See—*
Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, 4,566,032, Cl. 358-103.000.
Dagani, Michael J., to Ethyl Corporation. Process for producing substituted pyrroles. 4,565,878, Cl. 548-531.000.
Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., to Nestec S.A. Method and apparatus for frying. 4,565,704, Cl. 426-233.000.
Daggs, Paul R.; Wilkowske, Arthur C.; and Miller, Gordon D. Return jointed sign post pedestal. 4,565,466, Cl. 404-10.000.

Dahl, Ernest A. Magnetically operated electrolyte circulation system. 4,565,748, Cl. 429-10.000.

Daicel Chemical Industries, Ltd.: *See*—
Horikawa, Takeshi; and Sasaki, Kenichi, 4,565,849, Cl. 525-420.000.
Murai, Takaaki; Watanabe, Shoji; Inoue, Kimio; and Yagii, Toyokazu, 4,565,859, Cl. 528-365.000.

Daikin Kogyo Co., Ltd.: *See*—
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; and Fukuyama, Kouji, 4,565,943, Cl. 310-357.000.

Daimer, Wolfgang: *See*—
Paar, Willibald; and Daimer, Wolfgang, 4,565,838, Cl. 523-414.000.

Daimler-Benz Aktiengesellschaft: *See*—
Merkle, Josef, 4,565,390, Cl. 280-726.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Shimano, Noriyuki, 4,566,041, Cl. 358-284.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Araki, Shuichi, 4,566,128, Cl. 382-56.000.
Masuda, Tatsunosuke, 4,566,016, Cl. 346-108.000.

Dakubu, Salifu: *See*—
Hemmila , Ilkka; and Dakubu, Salifu, 4,565,790, Cl. 436-537.000.

Dall'Osso, Gastone: *See*—
Seragnoli, Enzo; and Dall'Osso, Gastone, 4,565,284, Cl. 198-792.000.

Daly, Richard T., to Lasers For Medicine. Laser ophthalmic surgical system. 4,565,197, Cl. 128-303.100.

Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, to Robert Bosch GmbH. Method and apparatus for recognition of knocking in an internal combustion engine. 4,565,087, Cl. 73-35.000.

Dana Corporation: *See*—
Cameron, Mick G., 4,565,274, Cl. 192-107.00R.

Davenport, William H., to Tektronix, Inc. Emitter coupled programmable oscillator. 4,565,977, Cl. 331-113.00R.

Davis, Ed D.: *See*—
Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., 4,565,620, Cl. 208-80.000.

Davis, Marshall E.; and Sung, Rodney L., to Texaco Inc. Motor fuel composition. 4,565,548, Cl. 44-51.000.

Davis, Thomas A., to Exxon Research and Engineering Co. Method for deasphalting heavy oils using a miscible solvent at a low treat ratio and a carbon dioxide antisolvent. 4,565,623, Cl. 208-309.000.

Dayco Corporation: *See*—
Long, Delmar D., 4,565,715, Cl. 427-176.000.

de Buda, Francis, to Stephens, John. Production of silica gel and an adsorbent, absorbent product from sericitic clay. 4,565,794, Cl. 502-83.000.

Deere & Company: *See*—
Brautigam, Peter F., 4,565,407, Cl. 297-335.000.

DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, to American Standard Inc. Self-contained flow through sewage waste disposal system. 4,565,636, Cl. 210-748.000.

Degussa Aktiengesellschaft: *See*—
Hoffacker, Gerd; and Muller, Willi, 4,565,608, Cl. 204-44.000.

Dehganpour, Sam: *See*—
Kuo, Clinton C. K.; and Dehganpour, Sam, 4,565,932, Cl. 307-264.000.

Dehnisch, Torbjorn. Motorcycle fork tree. 4,565,384, Cl. 280-279.000.

Delaney, George: *See*—
Merk, Edward; Delaney, George; Wasynczuk, Lyon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.

DeLigt, John; and Nikkel, Willem A., to Westvaco Corporation. Method and apparatus for wrapping paper rolls. 4,565,049, Cl. 53-415.000.

Dellar, Richard J.: *See*—
Buszard, David L.; and Dellar, Richard J., 4,565,833, Cl. 521-107.000.

Deltec Systems, Inc.: *See*—
Berg, Harvey F., 4,565,542, Cl. 604-131.000.

De Mets, Albert, to Constructiewerkhuizen De Mets N.V. Continuous operation press. 4,565,509, Cl. 425-101.000.

Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; Kresse, Horst; and Weissflog, Wolfgang, to Veb Werk fur Fernsehdektronik im Veb Kombinat Mikroelektronik. Liquid crystal substituted 1,3-dioxanes and mixtures containing them. 4,565,881, Cl. 549-373.000.

Dengs, Bernd; and Dyson, Neil, to O&K Orenstein & Koppel Aktiengesellschaft. Autowalk. 4,565,276, Cl. 198-321.000.

Denka Chemical Corporation: *See*—
Barone, Bruno J.; and Bowman, William G., 4,565,880, Cl. 549-256.000.

Denney, Raymond E., to Aeroquip Corporation. Hydraulic manifold with automatic flow control. 4,565,211, Cl. 137-321.000.

Descamps, Marcel; and Polster, Peter, to Sanofi. Benzofuran derivatives and their therapeutic use. 4,565,828, Cl. 514-469.000.

DeSchane, Robert W. Insulation hold-down device. 4,565,037, Cl. 52-95.000.

Design Standards Corporation: *See*—
Crainich, Lawrence, 4,565,386, Cl. 280-602.000.

Despot, Janko: *See*—
Simeth, Claus; and Despot, Janko, 4,565,129, Cl. 101-240.000.

Desyllas, Peter L. L.: *See*—
Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, 4,566,104, Cl. 371-15.000.

Deutsche Star Kugelhalter GmbH: *See*—
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Devault, Michel; Gerard, Bernard; and Rouaud, Yvon. Time division multiplex switching network permitting communications between one or several calling parties and one or several called parties. 4,566,095, Cl. 370-60.000.

Deve, Vagn, to Combustion Engineering, Inc. Sand reclamation system with thermal pipe reclaimer apparatus. 4,565,328, Cl. 241-65.000.

Devens, Mark F.: *See*—
Pirmantgen, Robert E.; Adamski, John S.; and Devens, Mark F., 4,565,190, Cl. 128-80.00C.

Devour, Michael G.: *See*—
Tibbetts, Gary G.; and Devour, Michael G., 4,565,684, Cl. 423-447.300.

Deyak, Frank L.: *See*—
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., 4,565,842, Cl. 524-57.000.

Diaz, Felix V., to Siemens Corporate Res. & Support, Inc. Continuity check tone detector for use with a digital telecommunication system. 4,566,093, Cl. 370-14.000.

DiBuono, Dominick. Golf glove with rain shield. 4,564,956, Cl. 2-16.000.

Diepers, Heinrich, to Siemens Aktiengesellschaft. Ultrasonic transducer system and manufacturing method. 4,564,980, Cl. 29-25.350.

Diesel Kiki Co., Ltd.: *See*—
Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, 4,566,068, Cl. 364-431.050.
Kimura, Hideyuki; and Tomita, Hitoshi, 4,565,065, Cl. 60-285.000.

Diet Center, Inc.: *See*—
Ferguson, Roger, 4,565,701, Cl. 426-72.000.

Dieterich, Dieter: *See*—
Rasshofer, Werner; and Dieterich, Dieter, 4,565,645, Cl. 252-182.000.

Dietrich, Anton, to Optische Werke Rodenstock. Non-metallic eyeglass frame with adjustable nose pad arms. 4,565,429, Cl. 351-137.000.

DiLucia, Gilbert. Phonetic Chinese printing apparatus. 4,565,459, Cl. 400-110.000.

Dimeff, John, to Mark Telephone Products, Inc. Method and apparatus for transducer error cancellation. 4,565,097, Cl. 73-765.000.

Dimick, Delbert R., to Excellon Industries. Scan line generator. 4,566,038, Cl. 358-256.000.

Dinger, Nelson E., to Huber Reversible Fan, Inc. Fan blade support ring. 4,565,494, Cl. 416-206.000.

Di Schiena, Michele G., to Istituto Biologico Chemioterapico "ABC" S.p.A. Sodium salt of ursodeoxycholic sulphate. 4,565,811, Cl. 514-182.000.

Disco Abrasive Systems, Ltd.: *See*—
Sekiya, Shinji, 4,565,034, Cl. 51-401.000.

Discovision Associates: *See*—
Eberly, Carlyle J., 4,566,090, Cl. 369-46.000.

DiSilvestro, Robert J.: *See*—
Sahasrabudhe, Arun P.; and DiSilvestro, Robert J., 4,566,067, Cl. 364-426.000.

Ditcher, Jack, to A-Lok Products, Inc. Monolithic precast invert system. 4,565,347, Cl. 249-83.000.

Dockendorff, David G.: *See*—
Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., 4,566,001, Cl. 340-711.000.

Dr. Ing. h.c.F. Porsche A.G.: *See*—
Muller, Robert, 4,565,107, Cl. 74-473.00P.

Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., to Upjohn Company, The. Composition of matter and process. 4,565,699, Cl. 424-117.000.

Donetsky Nauchno-Issledovatelsky Institut Komplexnoi Mekhanizatsii Shakht: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., 4,565,491, Cl. 415-160.000.

Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, to Heimann GmbH. Method and apparatus for examining the content of containers. 4,566,113, Cl. 378-57.000.

Donnelly Corporation: *See*—
Bitter, Lowell E.; and Lundgren, Bryan L., 4,565,919, Cl. 219-509.000.

Doonan, David F., to Olin Corporation. Process for drying aminoguanidine bicarbonate. 4,565,014, Cl. 34-36.000.

Doppelfeld, Ille-Stephanie: *See*—
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.

Dorer, Casper J., Jr.; and Hayashi, Katsumi. Hydrocarbyl substituted carboxylic acylating agent derivative containing combinations, and fuels containing same. 4,565,550, Cl. 44-62.000.

Dorma-Baubeschlag GmbH & Co. KG.: *See*—
Kordes, Herbert, 4,564,973, Cl. 16-71.000.

Dorner, Karl H.: *See*—
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,565,834, Cl. 521-121.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, 4,565,670, Cl. 422-186.040.

Double, Glen P.: *See*—
Beam, David L.; and Double, Glen P., 4,566,050, Cl. 360-113.000.

Douglas, George H.: *See*—
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,565,826, Cl. 514-447.000.

Dover Corporation: *See*—
Parman, Oscar D., 4,565,214, Cl. 137-512.150.

Dow Chemical Company, The: *See—*
Emerson, Richard R.; Lee, Do I.; and Easterly, James P., 4,565,836, Cl. 523-346.000.
Fry, David L., 4,565,612, Cl. 204-98.000.
Johnston, Howard; and Troxell, Lillian H., 4,565,568, Cl. 71-94.000.

Dozier, Jan D.: *See—*
Frazier, Terry L.; and Dozier, Jan D., 4,565,246, Cl. 166-112.000.

Draber, Wilfried; Eue, Ludwig; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Imidazo-pyrrolo-pyridine derivatives useful as herbicidal agents. 4,565,566, Cl. 71-92.000.

Dragerwerk AG: *See—*
Weerda, Hilko; Meuret, Gerhard; and Pedersen, Peter, 4,565,194, Cl. 128-204.230.

Drain, Kieran F.; and Dunn, David J., to Loctite Corporation. Rapid curing epoxide composition employing stable carbenium salt catalyst. 4,565,837, Cl. 523-400.000.

Draizen, Seymour; and Sossong, Henry J., to Allied Corporation. Expandable quench surface. 4,565,237, Cl. 164-463.000.

Draper, Gregory L.: *See—*
Klees, Gary W.; and Draper, Gregory L., 4,566,055, Cl. 362-162.000.

Dresel, Donald W. Game apparatus. 4,565,375, Cl. 273-401.000.

Dronet, Jean-Marc, to Plastimecanique, S.A. Dosing apparatus for viscous liquid foodstuff. 4,565,304, Cl. 222-108.000.

Druckenbrodt, Wolf-Gunther: *See—*
Schneider, Volker; Stoll, Wolfgang; and Druckenbrodt, Wolf-Gunther, 4,565,672, Cl. 423-15.000.

Drucker, Alan S.; Kwok, King H.; and Whipple, Charles E., to Carrier Corporation. Polygon fan coil cabinet and method of assembly. 4,565,075, Cl. 62-507.000.

Druffel, James B., to Prescolite, Inc. Recessed lighting housing. 4,566,057, Cl. 362-364.000.

Du Pont Canada Inc.: *See—*
Lang, Theodore J., 4,565,742, Cl. 428-476.300.

Duck, Ivan A.: *See—*
Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., 4,564,971, Cl. 15-250.350.

Dudkin, Viktor E.: *See—*
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Perederey, Valery P., 4,565,491, Cl. 415-160.000.

Dueber, Thomas E.; and Monroe, Bruce M., to Du Pont de Nemours, E. I., and Company. Polymeric sensitizers for photopolymer composition. 4,565,769, Cl. 430-281.000.

Duncombe, Edward; and Thatcher, Gordon, to United Kingdom Atomic Energy Authority. Failed fuel detection apparatus. 4,565,667, Cl. 376-246.000.

Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., to Earth Search, Inc. Method for detecting mercury gas. 4,565,786, Cl. 436-26.000.

Dunn, David J.: *See—*
Drain, Kieran F.; and Dunn, David J., 4,565,837, Cl. 523-400.000.

Dunwald, Willi, to Bayer Aktiengesellschaft. Lacquer solutions based on hydantoin group-containing polymers. 4,565,843, Cl. 524-89.000.

Duphar International Research B.V.: *See—*
Bekkering, Hendrik M.; and Vulink, Henricus H. M., 4,565,543, Cl. 604-135.000.

Du Pont de Nemours, E. I., and Company: *See—*
Abbott, Scot D.; and Robertson, Charles W., Jr, 4,565,448, Cl. 356-336.000.
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,565,855, Cl. 526-247.000.
Dueber, Thomas E.; and Monroe, Bruce M., 4,565,769, Cl. 430-281.000.
Held, Robert P., 4,565,770, Cl. 430-294.000.
Hosegood, Edward A.; and Seufert, Ludwig E., 4,565,717, Cl. 427-339.000.
Levitt, George, 4,565,567, Cl. 71-92.000.
Matrick, Howard, 4,565,773, Cl. 430-331.000.

Dupont, Jean-Marie: *See—*
Castera, Jean-Paul; and Dupont, Jean-Marie, 4,565,984, Cl. 333-202.000.

Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., to Texaco Inc. Method for the preparation of formamides. 4,565,866, Cl. 544-176.000.

Duranleau, Roger G.: *See—*
Knifton, John F.; and Duranleau, Roger G., 4,565,896, Cl. 568-852.000.

Durbin, Enoch J. String for rackets. 4,565,061, Cl. 57-234.000.

Durst, Paul T.: *See—*
Theiss, John J.; and Durst, Paul T., 4,565,920, Cl. 219-513.000.

Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, to Siemens Aktiengesellschaft. Single pole plug connector arranged at the end of a single conductor shielded electric cable. 4,565,417, Cl. 339-94.00C.

Dussoubs, Daniele; Perichaud, Alain; and Savidan, Louis, to Universite d'Aix-Marseille II. Process for the preparation of polyacetylenes by dehydrochlorination of polyvinyl chloride, the products obtained and their applications, in particular, as semiconductors. 4,565,848, Cl. 525-331.500.

Dyer, Thomas A.: *See—*
Huelster, Richard L.; and Dyer, Thomas A., 4,565,483, Cl. 414-353.000.

Dynametric, Inc.: *See—*
LaSance, William A., 4,565,030, Cl. 49-44.000.

Dynamit Nobel AG: *See—*
Burkhardt, Rudolf; and Hass, Hansjurgen, 4,565,577, Cl. 106-85.000.

Dyson, Neil: *See—*
Dengs, Bernd; and Dyson, Neil, 4,565,276, Cl. 198-321.000.

E.G.O. Elektro-Gerate Blanc u. Fischer: *See—*
Lotter, Bruno; Essig, Willi; and Mayer, Hans, 4,565,989, Cl. 337-311.000.

E. R. Squibb & Sons, Inc.: *See—*
Varley, Willard D., 4,565,326, Cl. 241-24.000.

Earth Search, Inc.: *See—*
Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., 4,565,786, Cl. 436-26.000.

Easterly, James P.: *See—*
Emerson, Richard R.; Lee, Do I.; and Easterly, James P., 4,565,836, Cl. 523-346.000.

Eastern Company, The: *See—*
Kincaid, Herbert; and Wray, Michael L., 4,565,080, Cl. 70-215.000.

Eastman Kodak Company: *See—*
Barbee, Robert B., 4,565,851, Cl. 525-437.000.
Faust, Marilyn A.; and Osterhoudt, Hans W., 4,565,751, Cl. 429-94.000.
Henley, Charles J.; and Harvey, Frederick W., 4,565,431, Cl. 354-135.000.

Eaton Corporation: *See—*
Glenn, Robert L., 4,565,912, Cl. 200-157.000.

Eberly, Carlyle J., to Discovision Associates. Storage medium track pitch detector. 4,566,090, Cl. 369-46.000.

Ebisawa, Isao: *See—*
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Ebner, Jerry R., to Monsanto Company. Oxidation and ammoxidation process. 4,565,658, Cl. 260-465.300.

Ecker, Karl-Heinz; and Hoffmann, Erhard, to Wirth Maschinen-und Bohrgerate-Fabrick GmbH. Device for rotating and axially moving a bolt. 4,565,111, Cl. 81-53.200.

Eckert, Kim: *See—*
Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, 4,566,063, Cl. 364-200.000.

Eder, Theodor: *See—*
Koser, Jaroslav; and Eder, Theodor, 4,565,146, Cl. 114-79.00R.

Edwards, Ivan J. Adjustable bracket mount. 4,565,346, Cl. 248-558.000.

Edwards, Roger J.: *See—*
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.

Efstratiadis, Argiris A.: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,565,785, Cl. 435-317.000.

Ehara, Kohei: *See—*
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.

Eich, Patrick H.: *See—*
Ogden, Ralph; and Eich, Patrick H., 4,566,061, Cl. 364-146.000.

Eigenmann, Ludwig. Method and apparatus for the continuous laying road marking strips onto roadway surfaces. 4,565,467, Cl. 404-72.000.

Eimer, Klaus: *See—*
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Eisenberg, Joel H. Glove. 4,565,195, Cl. 128-133.000.

Eisenbrandt, Gerald A.; and Marks, James R., to Whirlpool Corporation. Method and apparatus for testing microwave ovens. 4,565,967, Cl. 324-95.000.

Ekato Industrieanlagen Verwaltungsgesellschaft mbH & Co.: *See—*
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Elder, Inc.: *See—*
Tapp, William T.; and Roberts, William M., 4,565,247, Cl. 166-123.000.

Electric Power Research Institute, Inc.: *See—*
MacLeod, Donald R., Jr., 4,565,495, Cl. 416-224.000.

Electronizue Serge Dassault S.A.: *See—*
Fumey, Michel J. R., 4,565,931, Cl. 307-262.000.

Elf France: *See—*
Crambes, Michel, 4,565,088, Cl. 73-61.10R.

Eli Lilly and Company: *See—*
Nicholas, Cynthia L.; Kornfeld, Edmund C.; and Schaus, John M., 4,565,871, Cl. 546-165.000.
Spry, Douglas O., 4,565,655, Cl. 260-245.20R.

Elmec Corporation: *See—*
Kameya, Kazuo, 4,565,981, Cl. 333-138.000.

Emerson, Geoffrey A., to International Business Machines Corporation. Data management for plasma display. 4,566,004, Cl. 340-771.000.

Emerson, Richard R.; Lee, Do I.; and Easterly, James P., to Dow Chemical Company, The. Multi-modal emulsions of water-soluble polymers. 4,565,836, Cl. 523-346.000.

Energy Conversion Devices, Inc.: *See—*
Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, 4,565,607, Cl. 204-38.100.

Energy Optics, Inc.: *See—*
Stokes, John H.; Clark, John I.; and Maxwell, Charles E., 4,565,995, Cl. 340-571.000.

England, Barry G.: *See—*
Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., 4,565,687, Cl. 424-1.100.

England, David C.: *See*—
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,565,855, Cl. 526-247.000.
Enomoto, Hiroshi: *See*—
Iwasaki, Takeru; Sasaki, Kenji; and Enomoto, Hiroshi, 4,565,064, Cl. 57-404.000.
Epson Corporation: *See*—
Usui, Minoru; and Oshima, Toshiaki, 4,565,461, Cl. 400-611.000.
Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Materials handling device. 4,565,478, Cl. 414-71.000.
Ernst, Donald M.; and Sanzi, James L., to Thermacore, Inc. Hybrid heat pipe. 4,565,243, Cl. 165-104.260.
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased (by Upton, Jenny, legal representative), to Minnesota Mining and Manufacturing Company. Method for making water-swellable composite sheet. 4,565,663, Cl. 264-120.000.
Espelage, Paul M.; and Nowak, James M., to General Electric Company. Twelve pulse AC motor drive. 4,565,953, Cl. 318-345.00E.
Espenhain, Donald L. Reciprocating marine propulsion engine. 4,565,530, Cl. 440-18.000.
Essig, Willi: *See*—
Lotter, Bruno; Essig, Willi; and Mayer, Hans, 4,565,989, Cl. 337-311.000.
Etablissements Georges Olivier: *See*—
Varin, Michel, 4,564,972, Cl. 15-359.000.
Etherton, Bradley P., to Exxon Research & Engineering Co. Polymerization catalyst, production and use. 4,565,796, Cl. 502-112.000.
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Naumann, Robert J.; and Ethridge, Edwin C., 4,565,557, Cl. 65-1.000.
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Dagani, Michael J., 4,565,878, Cl. 548-531.000.
Kao, James T. F., 4,565,879, Cl. 548-531.000.
Eto, Shin'ichi: *See*—
Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.
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Evans, William C.; and Noble, Haven D., to Viva-Tech, Inc. Light source for photographic color printers. 4,565,441, Cl. 355-37.000.
Everitube: *See*—
Lesueur, Pierre, 4,565,289, Cl. 206-443.000.
Excellon Industries: *See*—
Dimick, Delbert R., 4,566,038, Cl. 358-256.000.
Exxon Research and Engineering Co.: *See*—
Davis, Thomas A., 4,565,623, Cl. 208-309.000.
Etherton, Bradley P., 4,565,796, Cl. 502-112.000.
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Kimon, Peter M., 4,565,531, Cl. 440-50.000.
Rosensweig, Ronald E., 4,565,793, Cl. 502-74.000.
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., Jr., 4,565,831, Cl. 518-700.000.
Yates, David J. C.; and Baker, Rees T., 4,565,683, Cl. 423-447.300.
Eyster, Jerry L.: *See*—
Pugliese, Lawrence S.; and Eyster, Jerry L., 4,565,311, Cl. 225-94.000.
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Meier, Ernst, 4,565,239, Cl. 164-475.000.
F.LLI Pagnoni S.p.A.: *See*—
Pagnoni, Giorgio, 4,565,481, Cl. 414-285.000.
Fabbrini, Charles J.: *See*—
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., 4,565,842, Cl. 524-57.000.
Fabrique Ebel SA: *See*—
Paolini, Jean, 4,564,982, Cl. 24-71.00J.
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Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., 4,565,157, Cl. 118-719.000.
Faltin, Hans G., to Custom-Bilt Machinery, Inc. Apparatus for accurately spacing a sequence of shingled paper sheet products on a conveyor. 4,565,363, Cl. 271-315.000.
Fang, Sheng; and Rao, Kameswara K., to Signetics Corporation. Byte wide EEPROM with individual write circuits. 4,566,080, Cl. 365-185.000.
Fanuc Ltd.: *See*—
Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, 4,565,400, Cl. 294-88.000.
Faris, Barbara A.: *See*—
Franzblau, Carl; Faris, Barbara A.; and Civerchia-Perez, Linda, 4,565,784, Cl. 435-240.000.
Faust, Marilyn A.; and Osterhoudt, Hans W., to Eastman Kodak Company. Cathode for high current density and high power density electrochemical cells. 4,565,751, Cl. 429-94.000.
Fawzy, Moharram M., to Intra-Technology Associates, Inc. Permanent magnet rotor toroidal generator and motor. 4,565,938, Cl. 310-156.000.
Feasel, Robert L.: *See*—
Trumbo, Leroy C.; and Feasel, Robert L., 4,565,299, Cl. 220-323.000.
Fedynyshyn, Theodore H.: *See*—
Trotz, Samuel I.; and Fedynyshyn, Theodore H., 4,565,856, Cl. 526-265.000.
Feichtlbauer, Werner, to Trak Incorporated. Running-surface coating layer for skis. 4,565,387, Cl. 280-604.000.
Feinberg, Albert E., to Advance Transformer Co. Socket for fluorescent lamps. 4,565,415, Cl. 339-50.00R.
Felthuis, Jacob: *See*—
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Fenk, Josef; and Stepp, Richard, to Siemens Aktiengesellschaft. Integrable oscillator circuit. 4,565,978, Cl. 331-117.00R.
Ferag AG: *See*—
Leu, Willy, 4,565,130, Cl. 101-240.000.
Ferguson, Roger, to Diet Center, Inc. Protein supplement tablet used in diet programs. 4,565,701, Cl. 426-72.000.
Fesus, Laszlo : *See*—
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.
Feuillalay, Jean P. Cooking utensil having chamber beneath perforated cooking surface. 4,565,122, Cl. 99-447.000.
Fidelity Medical (Israel) Ltd.: *See*—
Lass, Yoram, 4,565,201, Cl. 128-696.000.
Fiedziuszko, Slawomir J., to Ford Aerospace & Communications Corporation. Double dielectric resonator stabilized oscillator. 4,565,979, Cl. 331-117.00D.
Filipowski, Jerome R.: *See*—
Balke, Roy L.; and Filipowski, Jerome R., 4,565,939, Cl. 310-177.000.
Filippini, Andrea; and Carobbi, Renato, to SIRAC S.p.A. Lactulose purification process. 4,565,582, Cl. 127-46.100.
Filterwerk Mann & Hummel GmbH: *See*—
Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.
Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., to Koppers Company, Inc. Rotary vane valve. 4,565,305, Cl. 222-368.000.
Fischer, Kurt; and Tanner, Hans, to Georg Fischer Aktiengesellschaft. Method and apparatus for compacting granular moulding materials. 4,565,233, Cl. 164-37.000.
Fischer, Kurt; and Tanner, Hans, to Georg Fischer Aktiengesellschaft. Apparatus for compacting granular molding materials by pressurized gaseous mediums. 4,565,235, Cl. 164-169.000.
Fischer & Porter Company: *See*—
Herzl, Peter J., 4,565,098, Cl. 73-861.220.
Fisher, James C.: *See*—
Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., 4,565,786, Cl. 436-26.000.
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., to Minnesota Mining and Manufacturing Company. Thermally transferable ink compositions. 4,565,842, Cl. 524-57.000.
Flander, Hans, to Georg Muller Kugellager-Fabrik K.G. Radial, radial angular-contact, and axial angular-contact ball bearing. 4,565,457, Cl. 384-450.000.
Flanders, Dale C.: *See*—
Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., 4,565,599, Cl. 156-603.000.
Fleet Industries: *See*—
Meneian, Harry, 4,565,333, Cl. 242-54.00R.
Fleury, Joel J.; and Maille, Jacques H. P., to Societe Anonyme de Telecommunications. Matrix infrared detector. 4,566,024, Cl. 357-32.000.
Flottmann-Werke GmbH: *See*—
Reimers, Reimer, 4,565,507, Cl. 417-564.000.
FMC Corporation: *See*—
Cavender, Patricia L., 4,565,875, Cl. 548-336.000.
Fogt, Eric J., to Medtronic, Inc. Flow through ion selective electrode. 4,565,665, Cl. 264-267.000.
Foley, Louise H.; Sello, Lilian H.; and Westley, John, to Hoffmann-La Roche Inc. Ethers of antibiotic X-14868A. 4,565,862, Cl. 536-16.800.
Folkins, Jeffrey J., to Xerox Corporation. Development system using electrically field dependent developer material. 4,565,438, Cl. 355-3.0DD.
Fookes, Reginald A.: *See*—
Watt, John S.; Fookes, Reginald A.; and Gravitis, Vilis L., 4,566,114, Cl. 378-88.000.
Forberg, Sevald: *See*—
Lagstrom, Emil G.; Westermark, Torbjorn E. G.; and Forberg, Sevald, 4,565,627, Cl. 210-242.100.
Ford Aerospace & Communications Corporation: *See*—
Anderson, David A. K.; Gilpin, James B.; and Kniffin, Melvin J., 4,565,925, Cl. 250-352.000.
Bains, William R., 4,565,340, Cl. 244-3.280.
Choung, Younho; and Goudey, Kenneth R., 4,566,012, Cl. 343-359.000.
Fiedziuszko, Slawomir J., 4,565,979, Cl. 331-117.00D.
van Ommering, Gerrit; and Koehler, Charles W., 4,565,749, Cl. 429-27.000.
Ford Motor Company: *See*—
Qaderi, Saiyed B. A., 4,565,852, Cl. 525-528.000.
Forster, Franz, to Linde Aktiengesellschaft. Axial piston motors having a friction brake. 4,565,117, Cl. 92-20.000.
Forte, Eddy, to Ciba-Geigy AG. Process for the production of photographic images by the silver dye bleach process. 4,565,775, Cl. 430-390.000.

Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, to Ciba-Geigy Corp. N-Phenylsulfonamides. 4,565,887, Cl. 564-85.000.
Foster, Raymond L. J.: *See*—
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.
Foster Wheeler Energy Corporation: *See*—
Zipay, Albert J.; and Gorzegno, Walter P., 4,565,554, Cl. 55-185.000.
Foxboro Company, The: *See*—
Gardner, Robert J.; and Martin, John R., 4,565,619, Cl. 204-400.000.
Francois, Bernard; and Mathis, Claude, to Societe Nationale Elf Aquitaine. Process for N-doping of polymers. 4,565,650, Cl. 252-518.000.
Frankland, John D.: *See*—
Highgate, Donald J.; and Frankland, John D., 4,565,722, Cl. 428-36.000.
Franzblau, Carl; Faris, Barbara A.; and Civerchia-Perez, Linda, to Boston University, Trustees of. Hydrogels capable of supporting cell growth. 4,565,784, Cl. 435-240.000.
Fraser Automation: *See*—
Marx, John J., 4,564,994, Cl. 29-468.000.
Frazier, Terry L.; and Dozier, Jan D., to Texaco, Inc. Reciprocating pump with partial flow reversal. 4,565,246, Cl. 166-112.000.
French, Gerald H., to Associated Equipment Corporation. Battery clamp. 4,565,414, Cl. 339-32.00R.
Fresenius AG: *See*—
Muller, Franz-Josef; Krutten, Viktor; and Krick, Gerd, 4,565,544, Cl. 604-164.000.
Frieling, Focko, to Siemens Aktiengesellschaft. Circuit for generating rapid pulses. 4,565,933, Cl. 307-269.000.
Frigerio, E. Giuliano: *See*—
Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, 4,565,810, Cl. 514-182.000.
Frigoscandia Contracting AB: *See*—
Olsson, Lennart; and Heber, Gerald, 4,565,282, Cl. 198-778.000.
Fry, David L., to Dow Chemical Company, The. Process for reducing sulphate ion concentration in aqueous sodium hydroxide solutions. 4,565,612, Cl. 204-98.000.
Fuji Electric Company, Ltd.: *See*—
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,566,126, Cl. 382-48.000.
Tsuji, Nobuhiko; Nakamura, Keijiro; and Iike, Masanori, 4,565,998, Cl. 340-645.000.
Fuji Electric Corporate Research and Development Ltd.: *See*—
Seki, Yasukazu; and Sato, Noritada, 4,565,588, Cl. 148-186.000.
Fuji Giken Kabushiki Kaisha: *See*—
Tanaka, Masaru; and Abe, Hideo, 4,565,361, Cl. 271-10.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Makita, Fujio, 4,565,108, Cl. 74-475.000.
Suzuki, Tsunehiko, 4,565,169, Cl. 123-192.00B.
Fuji Photo Film Co., Ltd.: *See*—
Akao, Mutsuo, 4,565,733, Cl. 428-215.000.
Akao, Mutsuo, 4,565,743, Cl. 428-522.000.
Arai, Yoshihiro; Nahara, Akira; and Fukino, Kiyotaka, 4,565,734, Cl. 428-216.000.
Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, 4,565,777, Cl. 430-552.000.
Uchiyama, Kaoru; and Ichikawa, Koji, 4,564,999, Cl. 29-806.000.
Fuji Photo Optical Co., Ltd.: *See*—
Kitaura, Tomimaro; Ohashi, Yutaka; and Yoneda, Masami, 4,566,107, Cl. 372-38.000.
Fujihara, Naoto: *See*—
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,566,126, Cl. 382-48.000.
Fujiki, Masao; and Seguchi, Kazukuni, to Tokyo Shibaura Denki Kabushiki Kaisha. Positioning apparatus for a magnetic head of a magnetic disk drive apparatus. 4,566,046, Cl. 360-78.000.
Fujikura, Makoto: *See*—
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.
Fujimori, Kyoichi: *See*—
Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, 4,566,068, Cl. 364-431.050.
Fujino, Masahisa: *See*—
Fukahori, Hidehiko; Fujino, Masahisa; and Satoh, Toshihiko, 4,565,432, Cl. 354-173.110.
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, to Central Glass Company, Limited. Nonexplosive chemical composition for gently breaking rock or concrete mass. 4,565,579, Cl. 106-118.000.
Fujita, Masahiro; and Uemura, Yukio, to Maeda Metal Industries, Ltd.; and Nissan Motor Co., Ltd. Bolt tightening apparatus having bolt tip discharging device. 4,565,112, Cl. 81-56.000.
Fujita, Masaki: *See*—
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.
Fujitsu Limited: *See*—
Ashida, Hideo, 4,565,980, Cl. 332-16.00R.
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.
Ohnishi, Katsumi; Mizushima, Yoshihiro; and Sato, Kiyosumi, 4,566,062, Cl. 364-200.000.
Sato, Kiyosumi; and Shimizu, Kazuyuki, 4,566,103, Cl. 371-12.000.
Yokoyama, Naoki, 4,566,021, Cl. 357-15.000.
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, to Nippondenso Co., Ltd. Air-conditioning and refrigerating system. 4,565,072, Cl. 62-196.200.
Fujiwara, Terufumi: *See*—
Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,697, Cl. 424-89.000.
Fukahori, Hidehiko; Fujino, Masahisa; and Satoh, Toshihiko, to Canon Kabushiki Kaisha. Motor driven camera. 4,565,432, Cl. 354-173.110.
Fukino, Kiyotaka: *See*—
Arai, Yoshihiro; Nahara, Akira; and Fukino, Kiyotaka, 4,565,734, Cl. 428-216.000.
Fukuda, Masatoshi: *See*—
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, 4,566,127, Cl. 382-56.000.
Fukuda, Tadaji: *See*—
Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.
Fukushima, Yoshimasa: *See*—
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.
Fukuyama, Kouji: *See*—
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; and Fukuyama, Kouji, 4,565,943, Cl. 310-357.000.
Fumey, Michel J. R., to Electronizue Serge Dassault S.A. Isolated amplifier circuit for amplifying pulses, in particular for a high voltage output. 4,565,931, Cl. 307-262.000.
Funakoshi, Satoshi: *See*—
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.
Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,697, Cl. 424-89.000.
Funakoshi, Takeshi: *See*—
Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.
Furtek, Edward J., to Vitronics Corporation. Multi-zone thermal process system utilizing nonfocused infrared panel emitters. 4,565,917, Cl. 219-388.000.
Furuhashi, Hiroyuki: *See*—
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.
Fusser, Rolf: *See*—
Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.
Futaba Denshi Kogyo K.K.: *See*—
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,565,741, Cl. 428-427.000.
G. D. Searle & Co.: *See*—
Miyano, Masateru; and Shone, Robert L., 4,565,882, Cl. 549-399.000.
G.D Societa' per Azioni: *See*—
Seragnoli, Enzo; and Mattei, Riccardo, 4,565,202, Cl. 131-281.000.
Seragnoli, Enzo; and Dall'Osso, Gastone, 4,565,284, Cl. 198-792.000.
Gagne, Robert, to PPG Industries, Inc. Method of and apparatus for analyzing atmosphere of a furnace. 4,565,561, Cl. 65-135.000.
Gala Industries, Inc.: *See*—
Hundley, Raymond E., III, 4,565,015, Cl. 34-182.000.
Gall, James W.: *See*—
Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., 4,565,620, Cl. 208-80.000.
Gallios, George C.; Whitehead, Derek; and Seleski, Richard, to Venus Scientific Inc. Converter with lossless snubbing components. 4,566,059, Cl. 363-17.000.
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., to Northern Telecom Limited. Control mechanism for a ring communication system. 4,566,098, Cl. 370-89.000.
Gane, Brian R.; and Hall, Antony H. P., to British Petroleum Company p.l.c., The. Production of aromatic hydrocarbons. 4,565,897, Cl. 585-415.000.
Gann, Ronald A., to ITT Corporation. Recycling pilot ignition system. 4,565,520, Cl. 431-46.000.
Ganrot, Anders B.: *See*—
Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., 4,565,704, Cl. 426-233.000.
Garbar, Henry J.; and Garbar, Joan H. Method for preparing bread dough. 4,565,703, Cl. 426-232.000.
Garbar, Joan H.: *See*—
Garbar, Henry J.; and Garbar, Joan H., 4,565,703, Cl. 426-232.000.
Gardner, Robert J.; and Martin, John R., to Foxboro Company, The. Composite electrode structure. 4,565,619, Cl. 204-400.000.
Garrison, Judd F.: *See*—
Batts, John H.; and Garrison, Judd F., 4,565,309, Cl. 223-96.000.
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, to Borg-Warner Corporation. Method and system for starting a motor-commutated SCR inverter. 4,565,957, Cl. 318-723.000.
Gass, Karl: *See*—
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,565,887, Cl. 564-85.000.
Gates, Allen P.: *See*—
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.
Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH: *See*—
Hotger, Karl, 4,565,410, Cl. 299-81.000.
Geen, John A.: *See*—
Ridgway, Peter C.; and Geen, John A., 4,565,941, Cl. 310-328.000.

Geesen, Heinrich. Method and apparatus for locating roof leaks in flat roofs. 4,565,965, Cl. 324-65.00R.

Gegner, Peter; and Vollnhals, Friedemann, to Siemens Aktiengesellschaft. Synchronization of pull-in oscillators in the transmission of digital signals. 4,565,975, Cl. 331-1.00A.

Geis, Everett R.: *See*—
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, 4,565,957, Cl. 318-723.000.

Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., to Massachusetts Institute of Technology. Graphoepitaxy by encapsulation. 4,565,599, Cl. 156-603.000.

General Dynamics Corporation: *See*—
Smith, Donald F., 4,565,476, Cl. 409-225.000.

General Electric Company: *See*—
Balke, Roy L.; and Filipowski, Jerome R., 4,565,939, Cl. 310-177.000.
Espelage, Paul M.; and Nowak, James M., 4,565,953, Cl. 318-345.00E.
Klopfer, Howard J., 4,565,858, Cl. 528-172.000.
Spiro, Clifford L.; and Lamby, Edward J., 4,565,248, Cl. 166-267.000.
Uhen, Richard F., 4,565,937, Cl. 310-90.000.
Webb, Jimmy L.; and Olsen, Cathryn E., 4,565,885, Cl. 556-410.000.

General Electric Plastics Structured Products Europe B.V.: *See*—
Hirsch, Elisabeth, 4,565,723, Cl. 428-71.000.

General Kinematics Corporation: *See*—
Musschoot, Albert, 4,565,279, Cl. 198-505.000.

General Mills, Inc.: *See*—
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,565,708, Cl. 426-579.000.

General Motors Corporation: *See*—
Altman, Gary F.; and Beck, Robert K., Jr., 4,565,518, Cl. 425-568.000.
Graeser, Joseph H., Jr.; and Schlais, Rudolph A., Jr., 4,565,418, Cl. 339-97.00C.
Tibbetts, Gary G.; and Devour, Michael G., 4,565,684, Cl. 423-447.300.
Woolley, James M., 4,565,265, Cl. 188-72.600.

General Tire & Rubber Company, The: *See*—
Stamper, Richard W.; and Hultz, Robert C., 4,565,732, Cl. 428-215.000.

Geng, Walter: *See*—
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Genus, Inc.: *See*—
Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., 4,565,157, Cl. 118-719.000.

Georg Fischer Aktiengesellschaft: *See*—
Fischer, Kurt; and Tanner, Hans, 4,565,233, Cl. 164-37.000.
Fischer, Kurt; and Tanner, Hans, 4,565,235, Cl. 164-169.000.

Georg Muller Kugellager-Fabrik K.G.: *See*—
Flander, Hans, 4,565,457, Cl. 384-450.000.

George, Albert A.; and George, David B. Pneumatic metering pump apparatus. 4,565,504, Cl. 417-401.000.

Geo. Bray & Co. Limited: *See*—
Hancock, John, 4,565,521, Cl. 431-75.000.

George, David B.: *See*—
George, Albert A.; and George, David B., 4,565,504, Cl. 417-401.000.

Geoservices S. A.: *See*—
Iseenmann, Olivier, 4,565,007, Cl. 33-127.000.

Gerard, Bernard: *See*—
Devault, Michel; Gerard, Bernard; and Rouaud, Yvon, 4,566,095, Cl. 370-60.000.

Gerard, Jean-Louis; and Loret, Marc, to Thomson-CSF. Process and device for regenerating the phase of synchronizing signals in a data carrier optical write-read apparatus. 4,566,091, Cl. 369-47.000.

Gerard, Jean-Louis; Lehureau, Claude; and Loret, Marc, to Thomson-CSF. Process and device for generating synchronizing signals in an optical data carrier write-read apparatus. 4,566,092, Cl. 369-59.000.

Gerhard Collardin GmbH: *See*—
Wagner, Heinz; Scharwaechter, Klaus; and Nee, Monika, 4,565,611, Cl. 204-44.500.

Geri, Istvan: *See*—
Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

Giebeler, Bernhardt F., to Bernhardt & Frederick Co., Inc. Ball valve device with hold-open tube. 4,565,213, Cl. 137-494.000.

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Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.

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Anderson, David A. K.; Gilpin, James B.; and Kniffin, Melvin J., 4,565,925, Cl. 250-352.000.

Giordano, Paul J., Jr.; and Smierciak, Richard C., to Standard Oil Company (Ohio), The. Ionically polymer-bound transition metal complex for photochemical conversion of light energy. 4,565,799, Cl. 502-155.000.

Girardin, Roger, to Charmilles Technologies, S.A. Travelling wire EDM apparatus provided with a wire support arm passed through the wall of a machining fluid tank. 4,565,915, Cl. 219-69.00W.

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Tessier, Jean; Teche, Andre ; and Girault, Pierre, 4,565,822, Cl. 514-351.000.

Girodin, Georges H., to S.A. Heuliez DEA. Axial cylinder machine. 4,565,118, Cl. 92-68.000.

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Orain, Michel A., 4,565,540, Cl. 464-111.000.

Gleason, Carla T.: *See*—
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Glenn, Robert L., to Eaton Corporation. Trigger switch with rotating contact carrier. 4,565,912, Cl. 200-157.000.

GMN Georg Muller Nurnberg GmbH: *See*—
Ballhaus, Heribert, 4,565,379, Cl. 277-25.000.
Wehrfritz, Heinz; and Brunke, Michael, 4,565,378, Cl. 277-3.000.

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Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

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Golander, Carl-Gustaf; and Larsson, Rolf, to IRD-Biomaterial AB. Surface modified solid substrate and a method for its preparation. 4,565,740, Cl. 428-409.000.

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Goldman, Jay: *See*—
King, Allen; Collins, Peter; and Goldman, Jay, 4,565,999, Cl. 340-706.000.

Goldrian, Gottfried; and Rudolph, Volker, to International Business Machines Corp. (IBM). Method of driving electrodes in an electro-erosion printer. 4,566,019, Cl. 346-163.000.

Goloubkoff, Michel: *See*—
Meyer, Sylvain; Goloubkoff, Michel; and Guena, Jean, 4,566,132, Cl. 455-86.000.

Gonczi, Csaba: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

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Jurva, Edsel O.; and Goodin, Richard L., 4,565,093, Cl. 73-40.700.

Goodwin, Vernon L., to Support Systems International, Inc. Fluidized patient support system. 4,564,965, Cl. 5-453.000.

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Liggett, Paul E.; and Braun, David L., 4,565,729, Cl. 428-201.000.

Gordini, Dovilio, to Officine Savio S.p.A. Device to carry out doubling-twisting operations and twisted yarn obtained with said device. 4,565,060, Cl. 57-58.300.

Gorzegno, Walter P.: *See*—
Zipay, Albert J.; and Gorzegno, Walter P., 4,565,554, Cl. 55-185.000.

Gossman, Richard C.: *See*—
Heath, Allan B.; and Gossman, Richard C., 4,565,082, Cl. 72-45.000.

Gotanda, Motohiro. Detection device for detecting and indicating operation of a gas meter. 4,565,090, Cl. 73-198.000.

Gotaverken Arendal AB: *See*—
Liden, Hadar, 4,565,150, Cl. 114-265.000.

Goto, Kaoru: *See*—
Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, 4,565,471, Cl. 408-204.000.

Gotou, Akio: *See*—
Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, 4,565,916, Cl. 219-225.000.

Goudey, Kenneth R.: *See*—
Choung, Younho; and Goudey, Kenneth R., 4,566,012, Cl. 343-359.000.

Graber, Alfred, to Ciba-Geigy AG. Liquid spray apparatus for dispensing liquid droplets of constant droplet size. 4,565,322, Cl. 239-223.000.

Graeser, Joseph H., Jr.; and Schlais, Rudolph A., Jr., to General Motors Corporation. Insulation displacement terminal for nonmetallic core cable. 4,565,418, Cl. 339-97.00C.

Grant, Richard J., to Minnesota Mining and Manufacturing Company. Radiation-curable cellulose coating. 4,565,857, Cl. 527-301.000.

Grapho Metronic Mess- und Regeltechnik GmbH & Co. KG: *See*—
Wirz, Burkhardt; and Kammuller, Rainer, 4,565,450, Cl. 356-402.000.

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Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.

Gratze, Stephen C., to Marconi Company Limited, The. Filter. 4,565,983, Cl. 333-193.000.

Gravitis, Vilis L.: *See*—
Watt, John S.; Fookes, Reginald A.; and Gravitis, Vilis L., 4,566,114, Cl. 378-88.000.

Gray, James B.; and Joyce, Robert A., to Seam Team, Inc. System and method for application of internal heating to thermally responsive structures. 4,565,728, Cl. 428-200.000.

Gray, Kevin J.; and Sibley, Bruce D., to Aeroquip Corporation. Safety restraint for brake actuators. 4,565,120, Cl. 92-130.00R.

Great Plains Ventures: *See*—
Greenlee, Fred S., III, 4,565,283, Cl. 198-790.000.

Greaves, Gerald G., to Ameron Inc. Pipe joint. 4,565,393, Cl. 285-107.000.

Green Cross Corporation, The: *See*—
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.
Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,697, Cl. 424-89.000.

Greenberg, Dan. Ejector. 4,565,499, Cl. 417-174.000.

Greenlee, Fred S., III, to Great Plains Ventures. Means and process for extracting power from a passing cable. 4,565,283, Cl. 198-790.000.

Grego, Giorgo, to Cselt Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and apparatus for determining refractive-index profiles of cylindrical transparent bodies. 4,565,449, Cl. 356-361.000.

Grgic, Ivica; and Sochtig, Wolfgang, to Krauss-Maffei Aktiengesellschaft. Method of and apparatus for measuring the degree of gas charge in a liquid synthetic resin component. 4,565,085, Cl. 73-19.000.

Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, to Robert Bosch GmbH. Control device for shutting off an internal combustion engine. 4,565,170, Cl. 123-359.000.

Grobe, Klaus: *See*—
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Groelz, Philip. Cylindrical surface railcar center plate. 4,565,134, Cl. 105-199.00C.

Grosse, Joachim; Tiefel, Guenter; and Haufe, Wolfgang, to Siemens Aktiengesellschaft. Silver and metal oxides electrical contact material and method for making electrical contacts. 4,565,590, Cl. 148-431.000.

Grow, Robert D. Anchoring device for rock climbing. 4,565,342, Cl. 248-1.000.

Gruber, Robert J.: *See*—
Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., 4,565,765, Cl. 430-122.000.

Grunwald, Peter H. Overhead projector. 4,565,430, Cl. 353-61.000.

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Goebel, Franz; Haskins, Timothy B.; and Batson, David C., 4,565,752, Cl. 429-94.000.
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Seymour, Robert J.; and Stegeman, George I., 4,565,422, Cl. 350-96.190.

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Meyer, Sylvain; Goloubkoff, Michel; and Guena, Jean, 4,566,132, Cl. 455-86.000.

Gulla, Michael: *See*—
Cardin, William J.; Gulla, Michael; and Newton, Charles L., 4,565,575, Cl. 106-1.220.

Gunderson Clinic: *See*—
Boettcher, Marlon, 4,565,368, Cl. 272-129.000.

Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., to United States of America, Agriculture. Synthetic pheromone 10-methyl-2-tridecanone and its use in controlling the southern corn rootworm and related diabroticites. 4,565,695, Cl. 424-84.000.

Guttag, Karl M., to Texas Instruments Incorporated. Table lookup multiplier employing compressed data read only memory. 4,566,075, Cl. 364-754.000.

Haartti, Juhani; Heitto, Pertti; Helsto, Jaakko J.; and Vartiainen, Nuutti, to Larox Oy. Method for treating cellulose obtained from cellulose cooking process. 4,565,602, Cl. 162-56.000.

Haas, Robert T.: *See*—
Sims, Dewey M., Jr.; and Haas, Robert T., 4,566,049, Cl. 360-106.000.

Haby, Robert: *See*—
Wehrmann, Rick; and Haby, Robert, 4,565,592, Cl. 156-64.000.

Hadhazy, Pal: *See*—
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Hadland Photonics Limited: *See*—
Huston, Alexander E., 4,565,923, Cl. 250-213.0VT.

Haferl, Peter E., to RCA Corporation. Television raster distortion correction circuit. 4,565,949, Cl. 315-371.000.

Hagiwara, Takashi, to Sigma Enterprises Incorporated. Optoelectronic coin entry sensing system for coin operated machines. 4,565,275, Cl. 194-97.00R.

Haide, Karl, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Self-priming centrifugal pump. 4,565,489, Cl. 415-53.00R.

Haigh, David C.: *See*—
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.

Hall, Antony H. P.: *See*—
Gane, Brian R.; and Hall, Antony H. P., 4,565,897, Cl. 585-415.000.

Hall, Wayne A., to Steel Heddle Mfg. Co. Stabilized nose guide. 4,565,223, Cl. 139-91.000.

Hallerback, Stig L., to Aktiebolaget SKF. Hub for fans, wheels and the like. 4,565,493, Cl. 416-204.00R.

Halliburton Company: *See*—
Penny, Glenn S.; and Briscoe, James E., 4,565,639, Cl. 252-8.55B.
Sutton, David L.; and Burkhalter, John F., 4,565,578, Cl. 106-87.000.

Hamada, Akio; Masuzawa, Motomu; and Matsuda, Yoshiaki, to Kubota Ltd. Device for attaching front working implement to vehicle body. 4,565,484, Cl. 414-686.000.

Hamada, Masa: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.

Hampe, Peter A.: *See*—
Milbright, Arnold M.; and Hampe, Peter A., 4,565,038, Cl. 52-146.000.

Hanafusa, Mikio: *See*—
Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.

Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, to Energy Conversion Devices, Inc. Method of fabricating an electroplated substrate. 4,565,607, Cl. 204-38.100.

Hanamura, Takuji: *See*—
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.

Hancock, John, to Geo. Bray & Co. Limited. Safety pilot burners. 4,565,521, Cl. 431-75.000.

Hanni, Manfred; and Hechfellner, Kurt, to Siemens Aktiengesellschaft. Identification, friend or foe IFF installation. 4,566,009, Cl. 343-6.5LC.

Hansen, Hanspeter: *See*—
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,565,565, Cl. 71-92.000.

Hansen, Paul E.; and Nelson, Robert L., to Minnesota Mining and Manufacturing Company. Dry culture media. 4,565,783, Cl. 435-299.000.

Hansma, Paul K.; Moreland, John M.; and Alexander, Sam, to University of California, The Regents of the. Squeezable electron tunnelling junction. 4,566,023, Cl. 357-26.000.

Hanson, Charles B., to J. I. Case Company. Multi-mode steering system. 4,565,257, Cl. 180-135.000.

Hansson, P. E. Anders; and Jachimowicz, Felek, to W. R. Grace & Co. Retention and drainage aid. 4,565,604, Cl. 162-168.200.

Hanyu, Susumu; Kato, Kenji; and Hara, Kazumasa, to Janome Sewing Machine Co., Ltd. Method of automatically adjusting thread tension in a sewing machine. 4,565,143, Cl. 112-262.100.

Hanzely, Jozsef: *See*—
Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, 4,565,576, Cl. 106-23.000.

Hara, Kazumasa: *See*—
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Harada, Mas, to Qualitone Hearing Aids, Division of XCor Corp. Removal handle for in-the-ear hearing aids. 4,565,904, Cl. 179-107.00E.

Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., to International Business Machines Corp. Circuit for interfacing remote functional units to a terminal. 4,566,134, Cl. 455-607.000.

Hardie, Laurie S., to Hardie, Laurie Stanley; and Coleman, Leonard John. Vibratory sauna. 4,565,188, Cl. 128-24.200.

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Hardie, Laurie S., 4,565,188, Cl. 128-24.200.

Hardy, Michel: *See*—
Nedelec, Lucien; Torelli, Vesperto; and Hardy, Michel, 4,565,656, Cl. 260-397.470.

Harger, Mark A.; Amaral, Joseph E.; and Blatter, Harold, to RCA Corporation. Remote control transmitter arrangement for one or more television devices. 4,566,034, Cl. 358-194.100.

Hargett, Wyatt P., Jr.: *See*—
Collins, Michael J.; and Hargett, Wyatt P., Jr., 4,565,669, Cl. 422-78.000.

Harkness, John C.: *See*—
Church, Nathan L.; Cribb, W. Raymond; and Harkness, John C., 4,565,586, Cl. 148-12.70C.

Harmeson Manufacturing Company, Inc.: *See*—
Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., 4,565,021, Cl. 38-137.000.

Harris, Stephen J.: *See*—
Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., 4,566,001, Cl. 340-711.000.

Harrison, John D., to Raychem Corporation. Nickel/titanium/copper shape memory alloy. 4,565,589, Cl. 148-402.000.

Hart, Lawrence M., to Xerox Corporation. Apparatus and method for removing developer from the sump of an electrostatic copying or printing machine. 4,565,435, Cl. 355-3.0DD.

Harvey, Frederick W.: *See*—
Henley, Charles J.; and Harvey, Frederick W., 4,565,431, Cl. 354-135.000.

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Mayenkar, Krishna V., 4,565,633, Cl. 210-688.000.

Hasada, Eiichi: *See*—
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,565,072, Cl. 62-196.200.

Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, to Fujitsu Limited. Cassette-type magnetic-bubble memory apparatus. 4,566,079, Cl. 365-1.000.

Hasegawa, Tomoharu: *See*—
Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.

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Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, 4,565,331, Cl. 242-18.0PW.
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Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.
Hashimoto, Michiaki: *See*—
Nonogaki, Saburo; and Hashimoto, Michiaki, 4,565,768, Cl. 430-197.000.
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Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.
Haskins, Timothy B.: *See*—
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Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.
Hass, Hansjurgen: *See*—
Burkhardt, Rudolf; and Hass, Hansjurgen, 4,565,577, Cl. 106-85.000.
Hasselmann, Heinz; Kunze, Volkmar; and Bitsch, Harald, to Mannesmann Aktiengesellschaft. Winch drive. 4,565,352, Cl. 254-344.000.
Hatakeyama, Osamu: *See*—
Moriyama, Naoki; Koike, Hiroshi; and Hatakeyama, Osamu, 4,565,128, Cl. 101-93.190.
Hatch, Richard G.; and Tepermeister, Gary, to Beckman Instruments, Inc. Chromatographic cartridge column system. 4,565,632, Cl. 210-656.000.
Hathorn, Jack L.: *See*—
Scheier, Donald J.; and Hathorn, Jack L., 4,564,977, Cl. 17-11.000.
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Hautemont, Jean-Claude, to Societe a Responsabilite Limitee dite. Process and installation for packaging a product. 4,565,052, Cl. 53-453.000.
Hawkins, Donald E., to Hawkins, Stanley E., a part interest. Ladder apparatus. 4,565,262, Cl. 182-116.000.
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Hayase, Iwao, to Mitsubishi Denki Kabushiki Kaisha. Iron core for a stationary induction apparatus. 4,565,746, Cl. 428-638.000.
Hayashi, Katsumi: *See*—
Dorer, Casper J., Jr.; and Hayashi, Katsumi, 4,565,550, Cl. 44-62.000.
Hayashi, Yoshimasa: *See*—
Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, 4,565,162, Cl. 123-41.080.
Haybuster Manufacturing, Inc.: *See*—
Kopecky, Ivyl D., 4,565,141, Cl. 111-7.000.
Heath, Allan B.; and Gossman, Richard C., to Acheson Industries, Inc. Spray apparatus for metal forming machines. 4,565,082, Cl. 72-45.000.
Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, to University of California, The Regents of the. Production of immunogens by antigen conjugation to liposomes. 4,565,696, Cl. 424-88.000.
Heaton, Kenneth A.: *See*—
Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., 4,565,305, Cl. 222-368.000.
Heber, Gerald: *See*—
Olsson, Lennart; and Heber, Gerald, 4,565,282, Cl. 198-778.000.
Hechfellner, Kurt: *See*—
Hanni, Manfred; and Hechfellner, Kurt, 4,566,009, Cl. 343-6.5LC.
Heck, James V.: *See*—
Andrus, W. Alexander; Christensen, Burton G.; and Heck, James V., 4,565,808, Cl. 514-80.000.
Hefner, James L., to International Business Machines Corporation. Parallel-shift error reconfiguration. 4,566,102, Cl. 371-11.000.
Hefty, Arpad: *See*—
Hefty, Bela; and Hefty, Arpad, 4,565,336, Cl. 242-55.550.
Hefty, Bela; and Hefty, Arpad, to Hygolet AG. Take-up spool for a device for applying and conveying a hose-shaped protective covering for a toilet seat. 4,565,336, Cl. 242-55.550.
Hehl, Karl. Hydraulic speed controls for die closing unit of injection molding machine. 4,565,116, Cl. 91-519.000.
Heidjann, Franz, to Claas OHG. Self-propelled harvester thresher. 4,565,056, Cl. 56-14.400.
Heimann GmbH: *See*—
Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, 4,566,113, Cl. 378-57.000.
Heine, Otto R.; and Riede, Peter M., to R&H Technology, Inc. Throttling and shut-off valve for slurry pipelines and the like. 4,565,210, Cl. 137-219.000.
Heinonen, Ahti. Means for cleaning floor. 4,564,969, Cl. 15-147.00A.
Heinz, Peter G. Stained glass window constructing tool. 4,565,004, Cl. 30-314.000.
Heitto, Pertti: *See*—
Haartti, Juhani; Heitto, Pertti; Helsto, Jaakko J.; and Vartiainen, Nuutti, 4,565,602, Cl. 162-56.000.
Heitzmann, Michel; and Boudot, Marianne, to Thomson-CSF. Prematched module for an ultra-high frequency diode with high heat dissipation. 4,566,027, Cl. 357-81.000.
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Held, Robert P., to Du Pont de Nemours, E. I., and Company. Process for dot etching acid soluble photopolymerizable elements utilizing chemically soluble pigments. 4,565,770, Cl. 430-294.000.
Hellsten, Karl M. E.: *See*—
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.
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Henley, Charles J.; and Harvey, Frederick W., to Eastman Kodak Company. Photographic camera and flash assembly. 4,565,431, Cl. 354-135.000.
Hergenrother, Paul M., to United States of America, National Aeronautics and Space Administration. Ethynyl and substituted ethynyl-terminated polysulfones. 4,565,886, Cl. 556-436.000.
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Ruchser, Erich; and Ott, Helmut, 4,565,209, Cl. 137-116.300.
Herman, Robert D. Electronic signaling level. 4,565,010, Cl. 33-366.000.
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Hertel, Otto; Kiefer, Hans; and Arnold, Lothar, to BASF Aktiengesellschaft. Preparation of ionones. 4,565,894, Cl. 568-349.000.
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Browne, Ronald O.; and Hertzberg, William E., 4,565,053, Cl. 53-516.000.
Herwig, Thomas: *See*—
Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, 4,566,113, Cl. 378-57.000.
Herzl, Peter J., to Fischer & Porter Company. Hybrid sensing system for vortex flowmeter. 4,565,098, Cl. 73-861.220.
Hewlett-Packard Company: *See*—
Hornak, Thomas; and Baldwin, Gary L., 4,565,961, Cl. 323-312.000.
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.
Hibi, Tohru: *See*—
Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.
Hibino, Mitsuyoshi: *See*—
Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.
Hickenlooper, Franklin T.: *See*—
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.
Higashihata, Yoshihide: *See*—
Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; and Fukuyama, Kouji, 4,565,943, Cl. 310-357.000.
Higgins, Patrick K.: *See*—
Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., 4,565,719, Cl. 428-34.000.
Highgate, Donald J.; and Frankland, John D. Deformable polymeric compositions. 4,565,722, Cl. 428-36.000.
Higuchi, Yasuo, to Kabushiki Kaisha Japanlicensor. Vane-type rotary actuator. 4,565,119, Cl. 92-125.000.
Hilti Aktiengesellschaft: *See*—
Brennsteiner, Ernst; and Scholz, Dieter, 4,565,472, Cl. 408-226.000.
Himi, Kohei, to Chubu Industries, Inc. Food slicer. 4,565,329, Cl. 241-95.000.
Hino, Naganori: *See*—
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,565,569, Cl. 71-103.000.
Hirai, Shoichi: *See*—
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, 4,566,127, Cl. 382-56.000.
Hirai, Toshio: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.
Hirai, Yutaka: *See*—
Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.
Hirao, Yutaka: *See*—
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.
Hirashiba, Yuji: *See*—
Kaneko, Kenichi; Hirashiba, Yuji; and Kawai, Shinji, 4,564,961, Cl. 4-443.000.

Hiratsuka, Kousai: *See*—
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.

Hiratsuka, Yutaka: *See*—
Nakano, Asao; and Hiratsuka, Yutaka, 4,566,116, Cl. 378-121.000.

Hirayama, Takayuki: *See*—
Nagase, Hidenobu; and Hirayama, Takayuki, 4,565,178, Cl. 123-564.000.

Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, to Hitachi, Ltd. Electronic control apparatus for an internal combustion engine. 4,566,069, Cl. 364-431.120.

Hirooka, Koichi; Matsuda, Setsuyuki; and Arahata, Yoshikuni, to Mitsubishi Denki Kabushiki Kaisha. Gas-insulated electric device. 4,565,901, Cl. 174-17.0GF.

Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, to Nippon Yusoki Co., Ltd.; and Dac Engineering Co., Ltd. Visually guided vehicle. 4,566,032, Cl. 358-103.000.

Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, to Sanyo Electric Co., Ltd. Mode setting arrangement for use in video tape recorder. 4,566,047, Cl. 360-85.000.

Hirsch, Elisabeth, to General Electric Plastics Structured Products Europe B.V. Composite polymeric panel and process for making same. 4,565,723, Cl. 428-71.000.

Hitachi Chemical Company, Ltd.: *See*—
Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, 4,565,845, Cl. 525-25.000.
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.
Nonogaki, Saburo; and Hashimoto, Michiaki, 4,565,768, Cl. 430-197.000.
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.

Hitachi, Ltd.: *See*—
Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, 4,566,069, Cl. 364-431.120.
Hoshi, Yoshikazu, 4,565,172, Cl. 123-446.000.
Jyomura, Shigeru; and Takeuchi, Hiroshi, 4,565,642, Cl. 252-62.900.
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.
Nakano, Asao; and Hiratsuka, Yutaka, 4,566,116, Cl. 378-121.000.
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.
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Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.
Yoshida, Kunihiko; Izumi, Eiki; and Ichiyama, Shuichi, 4,565,221, Cl. 137-885.000.

Hitachi, Ltd: *See*—
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Hitachi Medical Corp.: *See*—
Jyomura, Shigeru; and Takeuchi, Hiroshi, 4,565,642, Cl. 252-62.900.

Hiyama, Yasuhiro: *See*—
Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, 4,566,068, Cl. 364-431.050.

Hoeksma, Gerben S., to N.V. Nederlandsche Apparatenfabriek Nedap. DC-to-AC Voltage converter having galvanically separated input and output(s). 4,566,060, Cl. 363-21.000.

Hoesch Aktiengesellschaft: *See*—
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.

Hofeditz, Wolfgang, to Beiersdorf Aktiengesellschaft. Wool wax acid hydrogenation products useful as emulsifiers. 4,565,646, Cl. 252-309.000.

Hoffacker, Gerd; and Muller, Willi, to Degussa Aktiengesellschaft. Alkaline cyanide bath for electrolytic deposition of copper-tin-alloy coatings. 4,565,608, Cl. 204-44.000.

Hoffmann, Erhard: *See*—
Ecker, Karl-Heinz; and Hoffmann, Erhard, 4,565,111, Cl. 81-53.200.

Hoffmann-La Roche Inc.: *See*—
Bollag, Werner; Mayer, Hans J.; and Wyss, Pierre-Charles, 4,565,863, Cl. 536-18.200.
Foley, Louise H.; Sello, Lilian H.; and Westley, John, 4,565,862, Cl. 536-16.800.
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, 4,565,869, Cl. 544-323.000.
Petrzilka, Martin; and Schadt, Martin, 4,565,425, Cl. 350-350.00R.

Hofstetter, James F.: *See*—
Bartling, Jerry W.; and Hofstetter, James F., 4,565,071, Cl. 62-89.000.

Hollonbeck, Gary G.; and Cooper, Hugh E. Body support apparatus. 4,565,409, Cl. 297-411.000.

Holotronics Corporation, The: *See*—
Kirk, Ronald L., 4,566,031, Cl. 358-90.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, 4,565,750, Cl. 429-72.000.
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, 4,565,389, Cl. 280-663.000.
Kawasaki, Hiroshi; and Ukiana, Kazuoki, 4,565,269, Cl. 192-70.120.
Nagase, Hidenobu; and Hirayama, Takayuki, 4,565,178, Cl. 123-564.000.
Nishikawa, Masao; and Sakurai, Yoshimi, 4,565,267, Cl. 192-3.310.

Honda Kogyo Kabushiki Kaisha: *See*—
Yashima, Michio; Takanashi, Masami; and Komatsu, Akihiro, 4,565,909, Cl. 200-61.850.

Honeywell, Inc.: *See*—
Bartels, James I., 4,565,930, Cl. 307-118.000.
Kompelien, Arlon D., 4,565,092, Cl. 73-202.000.
Lee, Ed C.; and Roberts, Jon A., 4,566,026, Cl. 357-71.000.

Hoogovens Groep B.V.: *See*—
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.

Hopkins, David B. Truck bed support frame unit. 4,565,422, Cl. 296-3.000.

Horbinski, Ronald T. Perspective drafting instrument. 4,565,016, Cl. 33-432.000.

Hori, Akio: *See*—
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, 4,565,772, Cl. 430-320.000.

Hori, Masatake: *See*—
Azuma, Junichi; Watanabe, Koichi; and Hori, Masatake, 4,565,626, Cl. 210-138.000.

Horikawa, Takeshi; and Sasaki, Kenichi, to Daicel Chemical Industries, Ltd. Polyamide elastomer from carboxy terminated polyamide and polyoxy-2-methyl-1,3-propylene diol. 4,565,849, Cl. 525-420.000.

Horiuchi, Hiroshi: *See*—
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.

Hornak, Thomas; and Baldwin, Gary L., to Hewlett-Packard Company. Circuit for preserving the magnitude of the dc component in a pulsed current source. 4,565,961, Cl. 323-312.000.

Hosaka, Akio: *See*—
Oshiage, Katsunori; and Hosaka, Akio, 4,565,173, Cl. 123-458.000.

Hosegood, Edward A.; and Seufert, Ludwig E., to Du Pont de Nemours, E. I., and Company. Antisoiling treatment of synthetic filaments. 4,565,717, Cl. 427-339.000.

Hoshi, Yoshikazu, to Hitachi, Ltd. High-pressure fuel injection system for diesel engine. 4,565,172, Cl. 123-446.000.

Hoshino, Minoru: *See*—
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, to Nihon Early Kabushiki Kaisha (Japan Early Co., Ltd.). Plate positioning apparatus. 4,565,358, Cl. 269-60.000.

Hosoi, Toshiaki. Drill. 4,565,473, Cl. 408-229.000.

Hotfoil Limited: *See*—
Bloore, Frederick W.; and Seaman, Peter H., 4,565,455, Cl. 374-164.000.

Hotger, Karl, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH. Apparatus for controlling the supply of high-pressure liquid to a cutter drum assembly. 4,565,410, Cl. 299-81.000.

Hovland, Helge: *See*—
Berge, Odd; and Hovland, Helge, 4,565,709, Cl. 426-641.000.

Howa Kogyo Kabushiki Kaisha: *See*—
Iwasaki, Takeru; Sasaki, Kenji; and Enomoto, Hiroshi, 4,565,064, Cl. 57-404.000.

Howland, Leon A.: *See*—
Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., 4,565,765, Cl. 430-122.000.

Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, to Takeda Chemical Industries, Ltd. Phospholipid carbamates. 4,565,865, Cl. 544-110.000.

Hsieh, Shuang-shii; and Lehr, James R., to Tennessee Valley Authority. Beneficiation of phosphate ores containing surface activated silica. 4,565,625, Cl. 209-167.000.

Hubbard, James E., Jr., to Massachusetts Institute of Technology. Method and apparatus using a piezoelectric film for active control of vibrations. 4,565,940, Cl. 310-326.000.

Hubbard, Robert E.; and Wedemeyer, Robert C., to Medi-Physics, Inc. Device for dispensing radioactive gas. 4,565,301, Cl. 222-5.000.

Huber Reversible Fan, Inc.: *See*—
Dinger, Nelson E., 4,565,494, Cl. 416-206.000.

Huelster, Richard L.; and Dyer, Thomas A., to Pentek Corporation. Modular conveyor car and couplings therefor. 4,565,483, Cl. 414-353.000.

Huffman, William A.; and Novack, James C., to Minnesota Mining and Manufacturing Company. Asymmetric dichroic dye molecules having poly(arylazo) linking groups, a bis-substituted aryl thiazyl end group, and another end group. 4,565,424, Cl. 350-349.000.

Hukuta, Tadatoshi: *See*—
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.

Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., to Outokumpu Oy. Method for dispersing gas, for mixing a pulverous solid into a liquid to form a suspension, and for maintaining

the obtained good solid-gas-liquid suspension in the reactor. 4,565,660, Cl. 261-121.00R.
Hultz, Robert C.: *See—*
Stamper, Richard W.; and Hultz, Robert C., 4,565,732, Cl. 428-215.000.
Hundley, Raymond E., III, to Gala Industries, Inc. Centrifugal pellet dryer. 4,565,015, Cl. 34-182.000.
Hunt, Peter F.: *See—*
Jouquey, Alain; and Hunt, Peter F., 4,565,876, Cl. 548-426.000.
Huston, Alexander E., to Hadland Photonics Limited. Image converter having separate and sequential switching of deflector plate potentials. 4,565,923, Cl. 250-213.0VT.
Huyck Corporation: *See—*
Murka, August, Jr.; and Marcellus, Michael, 4,565,735, Cl. 428-234.000.
Hwang, Deng R.: *See—*
Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., 4,565,688, Cl. 424-3.000.
Hydrotreat, Inc.: *See—*
Arnaud, Johnny, 4,565,628, Cl. 210-232.000.
Hygolet AG: *See—*
Hefty, Bela; and Hefty, Arpad, 4,565,336, Cl. 242-55.550.
Ichihashi, Hiroshi: *See—*
Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, 4,565,801, Cl. 502-209.000.
Ichikawa, Koji: *See—*
Uchiyama, Kaoru; and Ichikawa, Koji, 4,564,999, Cl. 29-806.000.
Ichikawa, Kuniharu: *See—*
Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, 4,565,916, Cl. 219-225.000.
Ichinose, Isao: *See—*
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.
Ichiyama, Shuichi: *See—*
Yoshida, Kunihiko; Izumi, Eiki; and Ichiyama, Shuichi, 4,565,221, Cl. 137-885.000.
Idemitsu Petrochemical Co., Ltd.: *See—*
Kasahara, Toshikazu; Kajiya, Toshifumi; and Akiyoshi, Tomio, 4,565,844, Cl. 524-108.000.
Yaeo, Kenta; Kawamura, Shinji; and Mihara, Yoshiyuki, 4,565,720, Cl. 428-35.000.
Idemitsukosan Kabushiki Kaisha: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.
Igersheim, Francoise: *See—*
Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, 4,565,895, Cl. 568-362.000.
Iida, Takayuki; and Miyake, Tamio, to Omron Tateisi Electronics Co. Electronic thermometer. 4,565,456, Cl. 374-169.000.
Iike, Masanori: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiro; and Iike, Masanori, 4,565,998, Cl. 340-645.000.
Ikeda, Shigeo: *See—*
Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.
Ikegami, Takashi; and Mori, Masakazu, to Mitsubishi Denki Kabushiki Kaisha. Rotor for rotary machine. 4,565,936, Cl. 310-62.000.
Ikegami Tsushinki Co. Ltd.: *See—*
Takahashi, Hiroshi, 4,566,071, Cl. 364-468.000.
Ikehata, Shigeki; Shutoh, Kuniharu; and Aoyagi, Kazuya, to Sumitomo Metal Industries, Ltd. Drawn tubing manufacturing process and apparatus therefor. 4,565,664, Cl. 264-130.000.
Ikemoto, Shigeru. Wrapping device. 4,565,045, Cl. 53-64.000.
Illger, Hans-Walter: *See—*
Buysch, Hans-Josef; Illger, Hans-Walter; and Dorner, Karl H., 4,565,834, Cl. 521-121.000.
Illinois Tool Works Inc.: *See—*
Peterson, Francis C., 4,564,986, Cl. 29-33.00K.
Sygnator, Henry A., 4,565,475, Cl. 409-131.000.
Imada, Kazutoshi: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.
Imai, Masafumi: *See—*
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.
Imai, Tamotsu: *See—*
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, to Hoffmann-La Roche Inc. Dicarbamates. 4,565,869, Cl. 544-323.000.
Imoto, Masaya: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.
Imperial Chemical Industries PLC: *See—*
Bewick, David W., 4,565,782, Cl. 435-122.000.
Purdy, John R., 4,565,738, Cl. 428-349.000.
Inaba, Naomi: *See—*
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.
Inaoka, Koji: *See—*
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.
Inculet, Ion I., to Canadian Patents & Development Limited. Multi-liquid electrostatic method. 4,565,318, Cl. 239-3.000.
Indag Gesselschaft, fur Industriebedard mbH: *See—*
Wild, Rudolf, 4,565,452, Cl. 366-149.000.
Inductotherm Corporation: *See—*
Venetta, Henry J., 4,565,583, Cl. 134-12.000.
Industrial Products, Inc.: *See—*
Peters, Richard W., 4,566,119, Cl. 381-103.000.
Industrias Hidraulicas Pardo S.A.: *See—*
Pardo Herrera, Jose , 4,564,964, Cl. 5-164.00R.
Ing. Erich Pfeiffer GmbH & Co. KG: *See—*
Pfeiffer, Peter; and Maerte, Leo, 4,565,302, Cl. 222-38.000.
Ingersoll Milling Machine Company, The: *See—*
Charles, Paul A. S., 4,565,474, Cl. 409-51.000.
Innus Industrial Nuclear Services S.A.: *See—*
Booij, Johannes, 4,565,206, Cl. 134-112.000.
Inoue, Kimio: *See—*
Murai, Takaaki; Watanabe, Shoji; Inoue, Kimio; and Yagii, Toyokazu, 4,565,859, Cl. 528-365.000.
Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, to Hitachi Chemical Company, Ltd. Process for producing polyester and block copolymer thereof. 4,565,845, Cl. 525-25.000.
Inoue, Tuneyuki: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.
Intercal Company: *See—*
Vogel, F. Lincoln, 4,565,649, Cl. 252-503.000.
International Business Machines: *See—*
Barrett, William H.; and Minn, Andre B., 4,565,946, Cl. 313-408.000.
International Business Machines Corporation: *See—*
Apperley, Norman; Edwards, Roger J.; Foster, Raymond L. J.; Haigh, David C.; Haslam, Michael; and Verey, Peter, 4,566,005, Cl. 340-771.000.
Bederman, Seymour, 4,566,097, Cl. 370-89.000.
Crabtree, Robert P., 4,566,078, Cl. 364-900.000.
Emerson, Geoffrey A., 4,566,004, Cl. 340-771.000.
Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., 4,566,134, Cl. 455-607.000.
Hefner, James L., 4,566,102, Cl. 371-11.000.
Kalter, Howard L.; and Kiley, Donald B., 4,566,022, Cl. 357-23.140.
Langdon, Glen G., Jr.; and Siegel, Paul H., 4,566,044, Cl. 360-40.000.
Minn, Andre B., 4,565,947, Cl. 313-467.000.
International Business Machines Corp. (IBM): *See—*
Beam, David L.; and Double, Glen P., 4,566,050, Cl. 360-113.000.
Goldrian, Gottfried; and Rudolph, Volker, 4,566,019, Cl. 346-163.000.
International Computers Limited: *See—*
Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, 4,566,104, Cl. 371-15.000.
International Flavors & Fragrances Inc.: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.
International Jensen Incoporated: *See—*
Nation, Melvin S., 4,565,905, Cl. 179-115.5PC.
International Robotic Engineering, Inc.: *See—*
Kroczynski, Patrice, 4,565,487, Cl. 414-730.000.
International Standard Electric Corporation: *See—*
Brunn, Otto, 4,565,420, Cl. 339-193.00P.
International Telephone and Telegraph Corporation: *See—*
Milbright, Arnold M.; and Hampe, Peter A., 4,565,038, Cl. 52-146.000.
Young, Kenneth P., 4,565,241, Cl. 164-499.000.
Intra-Technology Associates, Inc.: *See—*
Fawzy, Moharram M., 4,565,938, Cl. 310-156.000.
Ipri, Alfred C.: *See—*
Jastrzebski, Lubomir L.; and Ipri, Alfred C., 4,566,025, Cl. 357-42.000.
IRD-Biomaterial AB: *See—*
Golander, Carl-Gustaf; and Larsson, Rolf, 4,565,740, Cl. 428-409.000.
Isaac, Timothy S., to Trek Bicycle Corporation. Front and rear wheel drop outs for bicycle frames. 4,565,383, Cl. 280-276.000.
Isett, Donald D.: *See—*
Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., 4,565,140, Cl. 112-121.110.
Ishibashi, Takayuki: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.
Ishigooka, Hiroshi: *See—*
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.
Ishihara, Hiroshi: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.
Ishihara, Noboru: *See—*
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.
Ishii, Kazuhiro: *See—*
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Ishii, Osamu: *See*—
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Ishikawa, Hidetake: *See*—
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Ishikawa, Masahide: *See*—
Inoue, Shohei; Aida, Takuzo; Sanuki, Koichi; and Ishikawa, Masahide, 4,565,845, Cl. 525-25.000.

Ishikawa, Masazumi: *See*—
Murofushi, Yasuyuki; Ishikawa, Masazumi; and Kawai, Mikio, 4,565,860, Cl. 528-422.000.

Ishikawa, Takashi: *See*—
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Ishimi, Haruyoshi; and Asanomi, Koji, to Mazda Motor Corporation. V-Type engine. 4,565,163, Cl. 123-41.440.

Ishizuka, Hiroshi. Apparatus for producing purified refractory metal from a chloride thereof. 4,565,354, Cl. 266-171.000.

Isogai, Masaki: *See*—
Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, 4,566,037, Cl. 358-213.000.

Isogai, Tokio: *See*—
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, to Honda Giken Kogyo Kabushiki Kaisha; and Yuasa Battery Co., Ltd. Electrolyte container for battery and method of filling electrolyte. 4,565,750, Cl. 429-72.000.

Israel, Kenneth W.: *See*—
Roettgen, Leslie A.; and Israel, Kenneth W., 4,565,177, Cl. 123-563.000.

Israel, Mrs. Lawrence: *See*—
Close, Leo R., 4,565,996, Cl. 340-572.000.

Issenmann, Olivier, to Geoservices S. A. Process and apparatus for measuring the coiled/uncoiled length of winding gear cable. 4,565,007, Cl. 33-127.000.

Istituto Biologico Chemioterapico "ABC" S.p.A.: *See*—
Di Schiena, Michele G., 4,565,811, Cl. 514-182.000.

Ito, Hajime: *See*—
Yano, Naomichi; Ito, Hajime; and Tanaka, Shigeru, 4,565,242, Cl. 165-10.000.

Ito, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Hydraulic apparatus for a continuously variable transmission. 4,565,110, Cl. 74-868.000.

Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, to Nippondenso Co., Ltd. Apparatus for measuring the quantity of airflow passing through an intake passage of an engine. 4,565,091, Cl. 73-118.000.

Ito, Yo: *See*—
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Ito, Yoshimasa: *See*—
Saito, Yukihiro; Ito, Yoshimasa; and Asakawa, Shiro, 4,565,846, Cl. 525-101.000.

Itsubo, Junichi: *See*—
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Itsumi, Manabu: *See*—
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.

ITT Corporation: *See*—
Gann, Ronald A., 4,565,520, Cl. 431-46.000.

ITT Industries, Inc.; Weiler, Rolf; and Bergelin, Klaus. Die-casting mold for a brake master cylinder housing and a die-cast brake master cylinder housing manufactured with this mold. 4,565,066, Cl. 60-533.000.

ITT Industries, Inc.: *See*—
Seiber, Wolfram, 4,565,411, Cl. 303-110.000.

Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., to Donetsky Nauchno-Issledovatelsky Institut Komplexnoi Mekhanizatsii Shakht. Propulsion installation of air-cushion transport vehicle. 4,565,491, Cl. 415-160.000.

Ivanov, Vladimir N.: *See*—
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Ives, Jeffrey L.; and Sciavolino, Frank C., to Pfizer Inc. Acyltripeptide immunostimulants. 4,565,653, Cl. 260-112.50R.

Iwami, Masahide, to Tachikawa Spring Co. Ltd. Seat adjustment device for a vehicle seat. 4,565,344, Cl. 248-429.000.

Iwamoto, Tugunari: *See*—
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,565,712, Cl. 427-53.100.

Iwasaki, Takeru; Sasaki, Kenji; and Enomoto, Hiroshi, to Howa Kogyo Kabushiki Kaisha. Process and apparatus for preparing fasciated spun yarns. 4,565,064, Cl. 57-404.000.

Iwasaki, Yuji; Fujimori, Kyoichi; and Hiyama, Yasuhiro, to Diesel Kiki Co., Ltd. Characteristic signal generator for an electronically controlled fuel injection pump. 4,566,068, Cl. 364-431.050.

Iwata, Masao, to Oppama Kogyo Kabushiki Kaisha. Contactless ignition device for internal combustion engines. 4,565,180, Cl. 123-602.000.

Izaki, Masataka: *See*—
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.

Izu, Masatsugu: *See*—
Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, 4,565,607, Cl. 204-38.100.

Izumi, Eiki: *See*—
Yoshida, Kunihiko; Izumi, Eiki; and Ichiyama, Shuichi, 4,565,221, Cl. 137-885.000.

J. I. Case Company: *See*—
Hanson, Charles B., 4,565,257, Cl. 180-135.000.

Jachimowicz, Felek: *See*—
Hansson, P. E. Anders; and Jachimowicz, Felek, 4,565,604, Cl. 162-168.200.

Jackson, Robert J., to Beecham Group p.l.c. Oral hygiene compositions. 4,565,691, Cl. 424-52.000.

Jacobsen, Steinar F.: *See*—
Stautland, Thomas; and Jacobsen, Steinar F., 4,565,124, Cl. 100-117.000.

James, Rex L.: *See*—
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Janome Sewing Machine Co., Ltd.: *See*—
Hanyu, Susumu; Kato, Kenji; and Hara, Kazumasa, 4,565,143, Cl. 112-262.100.

Japan Bars Company Limited: *See*—
Takada, Toshiya, 4,565,547, Cl. 44-51.000.

Japan Crown Cork Co Ltd.: *See*—
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Japan Exlan Company Limited: *See*—
Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, 4,565,832, Cl. 521-63.000.

Japan Metals and Chemicals Co., Ltd.: *See*—
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Jassawalla, Jal S.: *See*—
Miller, Phillip J.; and Jassawalla, Jal S., 4,565,497, Cl. 417-63.000.

Jastrzebski, Lubomir L.; and Ipri, Alfred C., to RCA Corporation. CMOS Structure incorporating vertical IGFETS. 4,566,025, Cl. 357-42.000.

Jeensalute, Thipthep; and Chakkaw, Somkiat, to Stewart-Riess Laboratories, Inc. Air bubble detecting and discriminating circuit arrangement and method. 4,565,500, Cl. 417-53.000.

Jeffries, Russell A.: *See*—
Singer, Irwin L.; and Jeffries, Russell A., 4,565,710, Cl. 427-35.000.

Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, to Ekato Industrieanlagen Verwaltungsgesellschaft mbH & Co. Agitator. 4,565,453, Cl. 366-279.000.

Jekat, Herbert: *See*—
Korner, Jorg-Peter; and Jekat, Herbert, 4,565,297, Cl. 220-254.000.

Jes, Otto J., to Willamette Industries, Inc. Two-piece asparagus carton. 4,565,316, Cl. 229-23.0BT.

Jeunhomme, Luc B.: *See*—
Alard, Francis; and Jeunhomme, Luc B., 4,565,445, Cl. 356-73.100.

Jilek, Walter; and Poferl, Gunter, to Voest-Alpine Aktiengesellschaft. Flushing arrangement for a metallurgical vessel. 4,565,355, Cl. 266-224.000.

Jimbou, Ryutarou: *See*—
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.

Jinushi, Michio: *See*—
Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.

Joelson, C. R. Self aligning concrete pipe with configured joint. 4,565,381, Cl. 277-207.00A.

John Thomas Batts, Inc.: *See*—
Batts, John H.; and Garrison, Judd F., 4,565,309, Cl. 223-96.000.

John Zink Company: *See*—
Schwartz, Robert E., 4,565,522, Cl. 431-202.000.

Johnson, Cydney A., to RCA Corporation. Shuttered CCD camera with low noise. 4,566,029, Cl. 358-50.000.

Johnson, George E.; and Newman, Walter, to Leviton Manufacturing Company, Inc. Threaded lamp adapter system with spring adapter. 4,565,419, Cl. 339-154.00L.

Johnston, Howard; and Troxell, Lillian H., to Dow Chemical Company, The. Pyridyl(oxy/thio)phenoxy compounds, herbicidal compositions and methods. 4,565,568, Cl. 71-94.000.

Jonas, Thomas S., to National Plastics Limited. Container closure. 4,565,293, Cl. 215-246.000.

Jonsson, Finn, to ASEA Aktiebolag. Method and a tool for bending the edge of thick sheet metal. 4,565,084, Cl. 72-387.000.

Jonsson, Kurt O. G.: *See*—
Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., 4,565,704, Cl. 426-233.000.

Jouquey, Alain; and Hunt, Peter F., to Roussel Uclaf. Process. 4,565,876, Cl. 548-426.000.

Jourdain, Gerard E. A.: *See*—
Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, 4,565,492, Cl. 415-175.000.

Joyce, Robert A.: *See*—
Gray, James B.; and Joyce, Robert A., 4,565,728, Cl. 428-200.000.

Junghans, Klaus, to Schering Aktiengesellschaft. Process for the production of 17α-acyloxy-6-chloro-1α,2α-methylene-3,20-diones. 4,565,657, Cl. 260-397.400.

Junghaus, Rainer: *See*—
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Jurgens, Heinrich J. W.: *See*—
Collins, Bruce H.; and Jurgens, Heinrich J. W., 4,565,184, Cl. 126-368.000.

Jurva, Edsel O.; and Goodin, Richard L., to Medtronic, Inc. Method for facilitating hermeticity leakage testing of an electrical feedthrough. 4,565,093, Cl. 73-40.700.

Jyomura, Shigeru; and Takeuchi, Hiroshi, to Hitachi, Ltd.; and Hitachi Medical Corp. Piezoelectric substances. 4,565,642, Cl. 252-62.900.

Kaama Marine Engineering, Inc.: *See*—
Connor, John A., 4,565,532, Cl. 440-57.000.

Kabushiki Kaisha Daikin Seisakusho: *See*—
Tojima, Hiromi; and Kajitani, Kouji, 4,565,273, Cl. 192-106.200.

Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Tanaka, Kunifusa, 4,566,070, Cl. 364-567.000.

Kabushiki Kaisha Japanlicensor: *See*—
Higuchi, Yasuo, 4,565,119, Cl. 92-125.000.

Kabushiki Kaisha Kobe Seikosho: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Kabushiki Kaisha Toshiba: *See*—
Matsutani, Kinya; and Yokota, Toshikazu, 4,565,671, Cl. 422-249.000.
Nagano, Katsumi, 4,565,962, Cl. 323-351.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.

Kachnowski, Thomas A.: *See*—
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Kadosawa, Tsuneaki, to Canon Kabushiki Kaisha. Remote control apparatus. 4,566,036, Cl. 358-210.000.

Kaegebein, Daniel P., to TX RX Systems, Inc. Tower mounted preamplifier. 4,565,972, Cl. 330-124.00D.

Kagami, Isao: *See*—
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.

Kaiko, Akira, to Mitsubishi Denki Kabushiki Kaisha. Speed controlling device for rolling mills. 4,565,952, Cl. 318-345.00R.

Kaiser, Robert T., to Spymark, Inc. Hand held body engaging exercise device. 4,565,367, Cl. 272-126.000.

Kajino, Jirou: *See*—
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.

Kajitani, Kouji: *See*—
Tojima, Hiromi; and Kajitani, Kouji, 4,565,273, Cl. 192-106.200.

Kajiwara, Makoto; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Method for the formation of dye image. 4,565,774, Cl. 430-382.000.

Kajiya, Toshifumi: *See*—
Kasahara, Toshikazu; Kajiya, Toshifumi; and Akiyoshi, Tomio, 4,565,844, Cl. 524-108.000.

Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, to Hitachi, Ltd. Method and apparatus for controlling sample temperature. 4,565,601, Cl. 156-643.000.

Kakuta, Atsushi: *See*—
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.

Kalter, Howard L.; and Kiley, Donald B., to International Business Machines Corporation. Flexible/compressed array macro design. 4,566,022, Cl. 357-23.140.

Kameya, Kazuo, to Elmec Corporation. Electromagnetic delay line. 4,565,981, Cl. 333-138.000.

Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle suspension system. 4,565,389, Cl. 280-663.000.

Kaminaga, Hiromitsu, to Yoshida Kogyo K.K. Unit curtain wall. 4,565,040, Cl. 52-235.000.

Kaminskas, Rimvydas A., to TRW Inc. Metallic stretch fabric. 4,565,745, Cl. 428-596.000.

Kamiyama, Toshibumi: *See*—
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.

Kammiller, Neil A., to Reliance Electric Company. Overvoltage protection circuit for power supply. 4,566,052, Cl. 361-18.000.

Kammuller, Rainer: *See*—
Wirz, Burkhardt; and Kammuller, Rainer, 4,565,450, Cl. 356-402.000.

Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, to Sanofi. Pyridazine derivatives having a psychotropic action and compositions. 4,565,814, Cl. 514-228.000.

Kan, Takahiro: *See*—
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Kanai, Toshio: *See*—
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Arai, Soichi; and Watanabe, Michiko, 4,565,643, Cl. 252-70.000.

Kaneko, Kenichi; Hirashiba, Yuji; and Kawai, Shinji, to Aisin Seiki Co., Ltd. Appliance for washing parts of human body. 4,564,961, Cl. 4-443.000.

Kannapell, Henry N.: *See*—
Paranjpe, Suresh C.; Scott, Burton W.; and Kannapell, Henry N., 4,566,014, Cl. 346-1.100.

Kanne, David B.: *See*—
Chavdarian, Charles G.; and Kanne, David B., 4,565,809, Cl. 514-112.000.

Kansai Paint Co., Ltd.: *See*—
Nakayama, Yasuharu, 4,565,839, Cl. 524-458.000.

Kao, James T. F., to Ethyl Corporation. Process for producing substituted pyrroles. 4,565,879, Cl. 548-531.000.

Kaplunov, Iosif B., deceased: *See*—
Milovidov, Boris A.; Kaplunov, Iosif B., deceased; and Kaplunova, Nadezhda V., administratix, 4,565,788, Cl. 436-137.000.

Kaplunova, Nadezhda V., administratix: *See*—
Milovidov, Boris A.; Kaplunov, Iosif B., deceased; and Kaplunova, Nadezhda V., administratix, 4,565,788, Cl. 436-137.000.

Kargel, Heribert: *See*—
Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., 4,565,332, Cl. 242-18.100.

Karger, Kim. Automatically retractable chalk line assembly. 4,565,011, Cl. 33-414.000.

Karlsson, Gunvor B. T.: *See*—
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., 4,565,549, Cl. 44-51.000.

Karlsson, Karl A., to Mouzavires, William E., a part interest. Apparatus for hand drilling. 4,565,470, Cl. 408-72.00R.

Kasahara, Toshikazu; Kajiya, Toshifumi; and Akiyoshi, Tomio, to Idemitsu Petrochemical Co., Ltd. Propylene-ethylene block copolymer composition. 4,565,844, Cl. 524-108.000.

Kase, Hiroshi, to O-M Limited. Composite machine tool. 4,564,995, Cl. 29-563.000.

Kashiwagi, Hiroshi: *See*—
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,565,388, Cl. 280-644.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Structure for connecting a handle to the push rods of a baby carriage. 4,565,388, Cl. 280-644.000.

Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, to Canon Kabushiki Kaisha. Electrophotographic process utilizing an azulenium salt-containing photosensitive member. 4,565,761, Cl. 430-83.000.

Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, to Hitachi, Ltd; and Hitachi Chemical Company, Ltd. Light-sensitive polymer composition with poly(amic acid), bisazide, and tertiary amine compound. 4,565,767, Cl. 430-196.000.

Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, to Sumitomo Chemical Company, Limited. Process for eluting indium from a chelate resin containing adsorbed indium. 4,565,673, Cl. 423-112.000.

Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, to Nippon Steel Corporation; and Japan Metals and Chemicals Co., Ltd. Process for production of high-chromium alloy by smelting reduction. 4,565,574, Cl. 75-130.500.

Katayama, Meiseki: *See*—
Yatsurugi, Yoshifumi; and Katayama, Meiseki, 4,565,913, Cl. 219-10.55M.

Kato, Chiaki, to Sumitomo Electric Industries, Ltd. Applicator for releasing agent. 4,565,762, Cl. 430-99.000.

Kato, Hirohisa: *See*—
Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, 4,565,726, Cl. 428-328.000.

Kato, Kenji: *See*—
Hanyu, Susumu; Kato, Kenji; and Hara, Kazumasa, 4,565,143, Cl. 112-262.100.

Kato, Masatake, to Canon Kabushiki Kaisha. Viewfinder for camera. 4,565,433, Cl. 354-201.000.

Katoh, Hiroharu, to Yoshin Giken Co., Ltd. Shredding apparatus. 4,565,330, Cl. 241-236.000.

Katsushima, Shin-ichi: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Katsuyama, Iwao; and Okuzumi, Aijiro, to Kyowa Denki Kagaku K.K. Process and apparatus for coating the surfaces of containers with a material. 4,565,718, Cl. 427-420.000.

Kauffman, Harold L.: *See*—
Brennan, Michael F.; and Kauffman, Harold L., 4,565,077, Cl. 68-158.000.

Kaus, Malcolm J.: *See*—
Etherton, Bradley P.; and Kaus, Malcolm J., 4,565,797, Cl. 502-116.000.

Kawahara, Atsushi: *See*—
Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, 4,566,037, Cl. 358-213.000.

Kawai, Hiroyuki: *See*—
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Kawai, Mikio: *See*—
Murofushi, Yasuyuki; Ishikawa, Masazumi; and Kawai, Mikio, 4,565,860, Cl. 528-422.000.

Kawai, Osamu, to NSK-Warner K.K. Driving force transmitting member for passive seat belt. 4,565,391, Cl. 280-804.000.

Kawai, Shinji: *See*—
Kaneko, Kenichi; Hirashiba, Yuji; and Kawai, Shinji, 4,564,961, Cl. 4-443.000.

Kawamura, Shinji: *See*—
Yaeo, Kenta; Kawamura, Shinji; and Mihara, Yoshiyuki, 4,565,720, Cl. 428-35.000.

Kawasaki, Hiroshi; and Ukiana, Kazuoki, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulically operated friction clutch. 4,565,269, Cl. 192-70.120.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Nakamura, Masahiro, 4,565,136, Cl. 110-245.000.
Yamamoto, Masaru; and Yuasa, Tsuneyoshi, 4,565,268, Cl. 192-0.049.

Kawasaki Seitetsu Kabushiki Kaisha: *See*—
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.

Kawasaki Steel Corporation: *See*—
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, to Sankin Industry Co., Ltd. Orthodontic appliance. 4,565,526, Cl. 433-8.000.

Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., to Harmeson Manufacturing Company, Inc. Portable ironing board. 4,565,021, Cl. 38-137.000.

Kaye, George C., to Sabre Engines Limited. Engine cooling system. 4,565,175, Cl. 123-542.000.

Kazda, Stanislav: *See*—
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.

Keen, Walter L. Hand-grippable carrier for transporting containers. 4,565,397, Cl. 294-34.000.

Keil, Rudolf; and Mathyssek, Konrad, to Siemens Aktiengesellschaft. Apparatus for the manufacture of constructions in fibers. 4,565,558, Cl. 65-1.000.

Keith, John C.: *See*—
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.

Kekesi, Krisztina: *See*—
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Keller, Hans-Peter, to Loepfe Brothers Limited. Apparatus for monitoring weft thread in a weaving machine. 4,565,224, Cl. 139-370.200.

Kennecott Corporation: *See*—
Carpenter, James H., Jr.; and Mullins, Ronald L., 4,565,035, Cl. 51-434.000.
Ruhl, Robert C., 4,565,334, Cl. 242-54.00R.

Kennedy, James C.: *See*—
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.

Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., to Buddy L. Corporation. Toy work vehicle having power take-off. 4,565,538, Cl. 446-427.000.

Kenworthy, James S.; and Kozinski, Thomas G., to PPG Industries, Inc. Method for producing a photoelectroforming mandrel. 4,565,616, Cl. 204-192.00C.

Keogh, Raymond J.: *See*—
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Kershaw, Roger F.: *See*—
McGrail, John F.; and Kershaw, Roger F., 4,564,974, Cl. 16-353.000.

Khan, Aman U., to Whirlpool Corporation. Ram and frameless cabinet assembly for compactor. 4,565,125, Cl. 100-214.000.

Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., to Reagents of the University of Michigan, The. Monoclonal antibodies specific for the unbound β subunit of human chorionic gonadotropin. 4,565,687, Cl. 424-1.100.

Khirwadkar, Prabhakar R. Hydraulic lifting assembly for mounting a crane jib. 4,565,291, Cl. 212-180.000.

Kiefer, Gunther, to Adolf Illig Maschinenbau GmbH & Co. Apparatus for shaping and cutting a thin thermoplastic sheet to make articles and for stacking the articles. 4,565,513, Cl. 425-289.000.

Kiefer, Hans: *See*—
Hertel, Otto; Kiefer, Hans; and Arnold, Lothar, 4,565,894, Cl. 568-349.000.

Kikuno, Mitsutoyo, to Ricoh Company, Ltd. Servo system. 4,565,950, Cl. 318-85.000.

Kiley, Donald B.: *See*—
Kalter, Howard L.; and Kiley, Donald B., 4,566,022, Cl. 357-23.140.

Kim, Hongzoon; and Salamy, Thomas E., to Philip A. Hunt Chemical Corporation. Photographic developer composition. 4,565,776, Cl. 430-467.000.

Kim, Ki-Soo: *See*—
Herscovici, Eva J.; and Kim, Ki-Soo, 4,565,853, Cl. 525-530.000.

Kim, Sun H.; and Moreau, Jacques-Pierre, to Biomeasure, Inc. Pyrazolo[1,5-a]-1,3,5-triazines. 4,565,815, Cl. 514-246.000.

Kime, Kenjiro, to Mitsubishi Denki Kabushiki Kaisha. Deviation correction apparatus for optical disc light beams. 4,566,089, Cl. 369-45.000.

Kimon, Peter M., to Exxon Research and Engineering Co. Ship propulsion system. 4,565,531, Cl. 440-50.000.

Kimura, Hideyuki; and Tomita, Hitoshi, to Diesel Kiki Co., Ltd. Exhaust-gas particle treating device for internal-combustion engine. 4,565,065, Cl. 60-285.000.

Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp. 4,565,948, Cl. 313-487.000.

Kincaid, Herbert; and Wray, Michael L., to Eastern Company, The. Latch with removable lock. 4,565,080, Cl. 70-215.000.

King, Allen; Collins, Peter; and Goldman, Jay, to Prime Computer, Inc. Light pencil. 4,565,999, Cl. 340-706.000.

King, Todd L.: *See*—
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, 4,565,957, Cl. 318-723.000.

King, William F., to Chevron Research Company. Fungicidal tin salts of thienyl and furyl hydroxamic acids, compositions, and method of use therefor. 4,565,812, Cl. 514-189.000.

Kirin Beer Kabushiki Kaisha: *See*—
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Kirjavainen, Kari J., to Oy Nokia AB. Double extruder for the production of a two-layer tubular extruded product. 4,565,510, Cl. 425-113.000.

Kirk, Ronald L., to Holotronics Corporation, The. Spatial light modulation with application to electronically generated holography. 4,566,031, Cl. 358-90.000.

Kiss, Pal: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Kitaura, Tomimaro; Ohashi, Yutaka; and Yoneda, Masami, to Fuji Photo Optical Co., Ltd. Laser apparatus. 4,566,107, Cl. 372-38.000.

Kithany, Subhash: *See*—
Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, 4,565,676, Cl. 423-210.000.

Klees, Gary W.; and Draper, Gregory L. Candle holder. 4,566,055, Cl. 362-162.000.

Klein, Walter; and Rhemann, Herbert, to OMV Aktiengesellschaft. Device for the step-wise pressure release on the expansion of, in particular hot, gases. 4,565,212, Cl. 137-486.000.

Klement, Ekkehard: *See*—
Schuocker, Dieter; and Klement, Ekkehard, 4,566,077, Cl. 364-845.000.

Klement, Larry G.: *See*—
Crawford, Patrick J.; and Klement, Larry G., 4,565,486, Cl. 414-729.000.

Klenk, Martin: *See*—
Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, 4,565,087, Cl. 73-35.000.

Klimpert, Randall J.; and Meyer, Burton C., to Marvin Glass & Associates. Impact responsive toy. 4,565,537, Cl. 446-321.000.

Kline, Alva C. Convex key top configurations. 4,565,460, Cl. 400-490.000.

Klockner-Humboldt-Deutz AG: *See*—
Schneider, Wilfried, 4,565,068, Cl. 60-602.000.

Klopfer, Howard J., to General Electric Company. Polyetherimides with high thermal stability and solvent resistance and precursors therefor. 4,565,858, Cl. 528-172.000.

Klotz, Erhard: *See*—
Linde, Rolf; and Klotz, Erhard, 4,566,112, Cl. 378-2.000.

Klusman, Ronald W.: *See*—
Dunkhase, John A.; Klusman, Ronald W.; and Fisher, James C., 4,565,786, Cl. 436-26.000.

Knapp, Christopher E., to Norton Company. Partially stabilized zirconia bodies. 4,565,792, Cl. 501-104.000.

Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., to Xerox Corporation. Process of developing electrostatic latent images comprised of rotating magnets contained in stationary shell and synthetic carrier. 4,565,765, Cl. 430-122.000.

Knecht, Thomas A., to Rosemount Inc. Pressure transducer. 4,565,096, Cl. 73-718.000.

Kniffin, Melvin J.: *See*—
Anderson, David A. K.; Gilpin, James B.; and Kniffin, Melvin J., 4,565,925, Cl. 250-352.000.

Knifton, John F.; and Duranleau, Roger G., to Texaco Inc. Process for low pressure synthesis of ethylene glycol from synthesis gas. 4,565,896, Cl. 568-852.000.

Knifton, John F.: *See—*
Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., 4,565,866, Cl. 544-176.000.

Knorr, Andreas: *See—*
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.

Knox, Howard T., to ANCRA Corporation. Buckle-strap tiedown assembly. 4,564,981, Cl. 24-68.0CD.

Knutson, Richard K.: *See—*
Blake, Jon R.; Knutson, Richard K.; and VanHulle, Glenn J., 4,565,708, Cl. 426-579.000.

Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, to Japan Exlan Company Limited. Process for producing packing material for use in liquid chromatography. 4,565,832, Cl. 521-63.000.

Kobayashi, Hisao: *See—*
Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.

Kobayashi, Kazusuke; and Cho, Ryokche, to Mitsui Petrochemical Industries, Ltd. Fiber-reinforced concrete and reinforcing material for concrete. 4,565,840, Cl. 524-8.000.

Kobayashi, Takashi: *See—*
Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, 4,565,526, Cl. 433-8.000.

Kobayashi, Toshikazu: *See—*
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Kobukuro, Masahisa: *See—*
Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.

Koch, James J.: *See—*
Melby, Phillip J.; and Koch, James J., 4,565,196, Cl. 128-205.240.

Koch, Ronald J.: *See—*
Knapp, John F.; Howland, Leon A.; Gruber, Robert J.; and Koch, Ronald J., 4,565,765, Cl. 430-122.000.

Kodama, Masanori: *See—*
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.

Koehler, Charles W.: *See—*
van Ommering, Gerrit; and Koehler, Charles W., 4,565,749, Cl. 429-27.000.

Koeniger, Erich A., to Barnes-Hind, Inc. Method for altering the curvature of the cornea. 4,565,198, Cl. 128-305.000.

Kogumasaka, Katsuya: *See—*
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.

Kohler Co.: *See—*
Rozek, Roy J., 4,565,350, Cl. 251-292.000.

Kohshoh Limited: *See—*
Saito, Koji, 4,564,983, Cl. 24-170.000.

Koike, Hiroshi: *See—*
Moriyama, Naoki; Koike, Hiroshi; and Hatakeyama, Osamu, 4,565,128, Cl. 101-93.190.

Koinuma, Masahiro: *See—*
Shimoda, Mituhiko; Koinuma, Masahiro; and Ohta, Yoshitaka, 4,566,054, Cl. 361-422.000.

Koishi, Kenji: *See—*
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Koistinen, Pauli A. T., to Outokumpu Oy. Tube belt conveyor. 4,565,285, Cl. 198-819.000.

Kojima, Mitsumasa: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Isei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, to Kawasaki Steel Corporation; and ASEA AB. Method of stirring molten steel in a continuously casting mold and an apparatus therefor. 4,565,238, Cl. 164-468.000.

Koken Co., Ltd.: *See—*
Miyata, Teruo; and Namiki, Shinichi, 4,565,580, Cl. 106-124.000.

Kokubun, Yoshikazu; and Anazawa, Osamu, to Sanden Corporation. Dispensing mechanism for vending machines or the like. 4,565,300, Cl. 221-116.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Mizuno, Toshio; Satoh, Gunkichi; and Ohkawa, Michihisa, 4,566,100, Cl. 371-5.000.

Kokusan Kinzoku Kogyo Co., Ltd.: *See—*
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Kolber, Steven, to Coulter Electronics, Inc. Auto-zeroing linear analog to digital converter apparatus and method. 4,566,110, Cl. 377-10.000.

Kolling, Heinrich: *See—*
Andrews, Peter; Boshagen, Horst; and Kolling, Heinrich, 4,565,888, Cl. 564-179.000.

Kollmorgen Technologies Corporation: *See—*
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.

Komatsu, Akihiro: *See—*
Yashima, Michio; Takanashi, Masami; and Komatsu, Akihiro, 4,565,909, Cl. 200-61.850.

Komatsu Electronic Metals Co., Ltd.: *See—*
Yatsurugi, Yoshifumi; and Katayama, Meiseki, 4,565,913, Cl. 219-10.55M.

Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Image-forming member for electrophotography. 4,565,731, Cl. 428-212.000.

Kompelien, Arlon D., to Honeywell Inc. Flow sensor with adjustable sensitivity. 4,565,092, Cl. 73-202.000.

Komulainen, Risto, to Kymi-Stromberg OY. Inverter protected in respect of the rates of increase of current and voltage. 4,566,051, Cl. 361-13.000.

Kondo, Hirofumi: *See—*
Arakawa, Seiichi; Kondo, Hirofumi; and Seto, Junetsu, 4,565,779, Cl. 430-962.000.

Kondo, Hiroshi, to Tenyo Co., Ltd. Implement for magic trick for falsely cutting card or the like. 4,565,364, Cl. 272-8.00N.

Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, to Sumitomo Chemical Company, Limited. Diphenyl sulfone compounds, and their production and use. 4,565,569, Cl. 71-103.000.

Konishi, Motofumi: *See—*
Miura, Genmei; Konno, Akira; and Konishi, Motofumi, 4,566,002, Cl. 340-727.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kajiwara, Makoto; and Onodera, Kaoru, 4,565,774, Cl. 430-382.000.
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Konno, Akira: *See—*
Miura, Genmei; Konno, Akira; and Konishi, Motofumi, 4,566,002, Cl. 340-727.000.

Koomey, Inc.: *See—*
Tomlin, Jerry B., 4,565,349, Cl. 251-29.000.

Kopecky, Ivyl D., to Haybuster Manufacturing, Inc. Seeding apparatus with fertilizer applicator. 4,565,141, Cl. 111-7.000.

Kopo Konepohja Oy: *See—*
Kylmanen, Pasi, 4,565,327, Cl. 241-56.000.

Kopp, Richard; and Reichmann, Wolfgang, to Bayer Aktiengesellschaft. Use of carbonyl compounds, sulfonyl compounds and/or thioureas as stabilizers for solutions containing pyrocarbonic acid dialkyl esters and polyisocyanate preparations containing those esters. 4,565,648, Cl. 252-397.000.

Koppers Company, Inc.: *See—*
Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., 4,565,305, Cl. 222-368.000.

Koprio, Jurgen, to Balzers AG. Evaporator cell for vacuum deposition on substrates. 4,565,158, Cl. 118-726.000.

Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara R.T. Theophyllinyl-alkyl-oxadiazoles, process for the preparation thereof and pharmaceutical compositions containing same. 4,565,817, Cl. 514-263.000.

Kordes, Herbert, to Dorma-Baubeschlag GmbH & Co. KG. Door closing device having an adjustable length arm. 4,564,973, Cl. 16-71.000.

Kormoczy, Peter: *See—*
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., to Stanley Works, The. Traffic responsive control system for automatic swinging door. 4,565,029, Cl. 49-25.000.

Korner, Jorg-Peter; and Jekat, Herbert, to Uhde GmbH. High-pressure vessel with inner closure. 4,565,297, Cl. 220-254.000.

Kornfeld, Edmund C.: *See—*
Nicholas, Cynthia L.; Kornfeld, Edmund C.; and Schaus, John M., 4,565,871, Cl. 546-165.000.

Koser, Jaroslav; and Eder, Theodor, to Austria Metall AG. Boat hull and method of making same. 4,565,146, Cl. 114-79.00R.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Low surface energy material. 4,565,714, Cl. 427-54.100.

Koski, Erkki, to Valmet Oy. Size press. 4,565,155, Cl. 118-412.000.

Kosugi, Tetuo: *See—*
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.

Koszegi, Bela: *See—*
Kovacs, Andras; Szebeni, Rudolf; and Koszegi, Bela, 4,565,694, Cl. 424-80.000.

Kouchi, Tadashi; and Urakami, Yoshiharu, to Stanley Electric Co., Ltd. Headlamp for vehicle. 4,566,056, Cl. 362-297.000.

Kovacs, Andras; Szebeni, Rudolf; and Koszegi, Bela. Contraceptive vaginal tablets. 4,565,694, Cl. 424-80.000.

Kovacs, Gabor: *See—*
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Kozinski, Thomas G.: *See—*
Kenworthy, James S.; and Kozinski, Thomas G., 4,565,616, Cl. 204-192.00C.

Kraft, Chrispin S., to Casdade Systems Incorporated. Digital optical disk system. 4,566,087, Cl. 369-34.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Stolben, Hans-Adolf, 4,565,008, Cl. 33-172.00E.

Kramer, James H., to B. F. Goodrich Company, The. Pressure device for conveyor. 4,565,281, Cl. 198-628.000.

Kranz, Richard, to Tension Envelope Corporation. Two-way envelope with inside return seal flap. 4,565,317, Cl. 229-73.000.

Kratel, Gunter: *See*—
Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, 4,565,682, Cl. 423-336.000.

Krause, Dieter, to Siemens Aktiengesellschaft. Method and apparatus for cutting light waveguides. 4,565,310, Cl. 225-2.000.

Krauss-Maffei Aktiengesellschaft: *See*—
Grgic, Ivica; and Sochtig, Wolfgang, 4,565,085, Cl. 73-19.000.
Ramisch, Heinrich, 4,565,511, Cl. 425-146.000.

Kresse, Horst: *See*—
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; Kresse, Horst; and Weissflog, Wolfgang, 4,565,881, Cl. 549-373.000.

Kretschmer, Frank F., Jr.: *See*—
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,566,011, Cl. 343-17.2PC.

Krick, Gerd: *See*—
Muller, Franz-Josef; Krutten, Viktor; and Krick, Gerd, 4,565,544, Cl. 604-164.000.

Kroczynski, Patrice, to International Robotic Engineering, Inc. System of robots with legs or arms. 4,565,487, Cl. 414-730.000.

Kropp, Rudolf, to BASF Aktiengesellschaft. Process for the preparation of a salt of 1-(γ-halopropyl)-1,2,3,4-β-carbolines. 4,565,870, Cl. 546-85.000.

Krull, Manfred: *See*—
Stein, Karl H.; and Krull, Manfred, 4,565,736, Cl. 428-286.000.

Krumenacker, Leon: *See*—
Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, 4,565,895, Cl. 568-362.000.

Krumwiede, John F.; and Tsai, Yih-Wan, to PPG Industries, Inc. Energy efficient and anti-corrosive burner nozzle construction and installation configuration. 4,565,560, Cl. 65-134.000.

Kruse, Dirk, to Bergwerksverband GmbH. Heating wall for coke-oven battery. 4,565,605, Cl. 202-139.000.

Krutten, Viktor: *See*—
Muller, Franz-Josef; Krutten, Viktor; and Krick, Gerd, 4,565,544, Cl. 604-164.000.

Kubo, Kanji: *See*—
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, 4,565,389, Cl. 280-663.000.

Kubota Ltd.: *See*—
Hamada, Akio; Masuzawa, Motomu; and Matsuda, Yoshiaki, 4,565,484, Cl. 414-686.000.
Miyahara, Masayoshi; and Takagi, Masao, 4,565,102, Cl. 74-15.400.
Yano, Naomichi; Ito, Hajime; and Tanaka, Shigeru, 4,565,242, Cl. 165-10.000.

Kubota, Susumu, to Rhythm Watch Co., Ltd. Synchronous motor device for timepiece. 4,565,955, Cl. 318-696.000.

Kuettner, Horst, to Thermax Wire Corporation. Low noise cable construction. 4,565,594, Cl. 156-47.000.

Kuffner Innenausbau: *See*—
Kuffner, Reinhold O., 4,564,975, Cl. 16-370.000.

Kuffner, Reinhold O., to Kuffner Innenausbau. Hinge hardware element for doors and windows of building and furniture. 4,564,975, Cl. 16-370.000.

Kuhl, Gunter H., to Mobil Oil Corporation. Synthetic zeolite ZSM-5 having a dimethylethylpropylammonium component. 4,565,681, Cl. 423-328.000.

Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., to Philips Petroleum Company. Hydrofining catalysts. 4,565,800, Cl. 502-200.000.

Kumar, Kaplesh, to Charles Stark Draper Laboratory, Inc., The. Method of storing hydrogen using nonequilibrium materials and system. 4,565,686, Cl. 423-644.000.

Kun, Judit: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Kunii, Kazushi, to Mitsubishi Denki Kabushiki Kaisha. Elevator system. 4,565,264, Cl. 187-89.000.

Kunogi, Mahito, to Oilgear Japan Company, The. Multiple-position solenoid-operated control valve. 4,565,219, Cl. 137-625.650.

Kunze, Claus: *See*—
Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, 4,566,113, Cl. 378-57.000.

Kunze, Volkmar: *See*—
Hasselmann, Heinz; Kunze, Volkmar; and Bitsch, Harald, 4,565,352, Cl. 254-344.000.

Kuo, Clinton C. K.; and Dehganpour, Sam, to Motorola, Inc. High voltage circuit for use in programming memory circuits (EEPROMs). 4,565,932, Cl. 307-264.000.

Kuraray Co., Ltd.: *See*—
Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, 4,565,854, Cl. 526-214.000.

Kurasz, Alexander J.: *See*—
Rebula, Edward; and Kurasz, Alexander J., 4,565,324, Cl. 239-290.000.

Kurita, Tokutaro: *See*—
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Kuroki, Yuzuru: *See*—
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Kusumi, Takaaki: *See*—
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Kuwabara, Masatoshi: *See*—
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.

Kuzuya, Susumu: *See*—
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.

Kwok, King H.: *See*—
Drucker, Alan S.; Kwok, King H.; and Whipple, Charles E., 4,565,075, Cl. 62-507.000.

Kylmanen, Pasi, to Kopo Konepohja Oy. Apparatus for piece-chopping wood. 4,565,327, Cl. 241-56.000.

Kymi-Stromberg OY: *See*—
Komulainen, Risto, 4,566,051, Cl. 361-13.000.

Kyowa Denki Kagaku K.K.: *See*—
Katsuyama, Iwao; and Okuzumi, Aijiro, 4,565,718, Cl. 427-420.000.

Kyowa Kentetsu Kabushiki Kaisha: *See*—
Naka, Masayasu, 4,565,005, Cl. 33-1.00G.

L.C.C.-C.I.C.E.: *See*—
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.

L. & C. Steinmuller GmbH: *See*—
Michalak, Stanislaw; Weber, Klaus-Dieter; and Meier, Jurgen, 4,565,679, Cl. 423-239.000.

Laborde, Alice L.: *See*—
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.

Lade, Gunther, to Robert Bosch GmbH. Convertible-format packaging machine. 4,565,048, Cl. 53-201.000.

Lagstrom, Emil G.; Westermark, Torbjorn E. G.; and Forberg, Sevald. Apparatus for gathering valuable floating, dissolved and suspended substances from sea water. 4,565,627, Cl. 210-242.100.

Laine, Edwin F., to United States of America, Energy. Acoustic velocity measurements in materials using a regenerative method. 4,566,084, Cl. 367-49.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Rimbert, Jean F., 4,565,234, Cl. 164-66.100.

Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., to Burroughs Corporation. Terminal elevating mechanism. 4,565,343, Cl. 248-346.000.

Lam, Yanta, to Meyer Manufacturing Company Limited. Cooking pans. 4,565,296, Cl. 220-94.00R.

Lamby, Edward J.: *See*—
Spiro, Clifford L.; and Lamby, Edward J., 4,565,248, Cl. 166-267.000.

Landoussy, Claude: *See*—
Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, 4,565,893, Cl. 568-72.000.

Lang, Theodore J., to Du Pont Canada Inc. Process for forming a sealant WEB-PVDC-base film laminate. 4,565,742, Cl. 428-476.300.

Lang, Wilfried: *See*—
Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, 4,565,682, Cl. 423-336.000.

Langdon, Glen G., Jr.; and Siegel, Paul H., to International Business Machines Corporation. Direction-constrained ternary codes using peak and polarity detection. 4,566,044, Cl. 360-40.000.

Larimer, John M. Pneumatic contact lens insertion device. 4,565,396, Cl. 294-1.200.

Larox Oy: *See*—
Haartti, Juhani; Heitto, Pertti; Helsto, Jaakko J.; and Vartiainen, Nuutti, 4,565,602, Cl. 162-56.000.

Larsen, Hans-Ole, to Mia-Lens Production A/S. Mold for making contact lenses, the male mold member being more flexible than the female mold member. 4,565,348, Cl. 249-122.000.

Larson, Charles R. Work piece holding device. 4,565,229, Cl. 144-154.000.

Larsson, Rolf: *See*—
Golander, Carl-Gustaf; and Larsson, Rolf, 4,565,740, Cl. 428-409.000.

LaSance, William A., to Dynametric, Inc. Emergency exit systems for revolving doors. 4,565,030, Cl. 49-44.000.

Lasers For Medicine: *See*—
Daly, Richard T., 4,565,197, Cl. 128-303.100.

Lass, Yoram, to Fidelity Medical (Israel) Ltd. Signal processing apparatus and high resolution electrocardiograph equipment including same. 4,565,201, Cl. 128-696.000.

Lassiaz, Philippe, to Valeo. Operating member for clutch diaphragm spring, and process for mounting it thereon. 4,565,271, Cl. 192-89.00B.

Latraverse, Germain. Device for carrying out a paint touch up in a corner. 4,564,970, Cl. 15-230.110.

Laubie, Michel: *See*—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,565,819, Cl. 514-307.000.

Laurendeau, Gilles H. Y.; and Leprince, Jean-Bernard G. H., to Shell Oil Company. Two-stage volumetric pump for liquefied petroleum gases in liquid phase. 4,565,501, Cl. 417-267.000.

Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., to A. Nattermann & Cie GmbH. Substituted aminoalkanol phospholipids. 4,565,659, Cl. 260-925.000.

Lavender, Ardis, to Armour Pharmaceutical Co. Freezing frame for a plasma container. 4,565,073, Cl. 62-373.000.

LeaRonal, Inc.: *See*—
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,609, Cl. 204-44.400.
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,610, Cl. 204-44.400.

Le Du, Yannick; and Meiller, Francois, to Rhone-Poulenc Specialites Chimiques. Flocculation of aqueous media with novel flocculating adjuvant. 4,565,635, Cl. 210-727.000.

Lee, Do I.: *See*—
Emerson, Richard R.; Lee, Do I.; and Easterly, James P., 4,565,836, Cl. 523-346.000.

Lee, Ed C.; and Roberts, Jon A., to Honeywell Inc. Integrate ·rcuit bimetal layer. 4,566,026, Cl. 357-71.000.

Lefferts, Johannes, to Siteg Siebtechnik GmbH. Method for producing helix structures for use in forming helix belts. 4,564,992, Cl. 29-429.000.

Le Gleau, Denise: *See*—
Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, 4,566,105, Cl. 371-37.000.

Lehner A.G.: *See*—
Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, 4,565,810, Cl. 514-182.000.

Lehr, James R.: *See*—
Hsieh, Shuang-shii; and Lehr, James R., 4,565,625, Cl. 209-167.000.

Lehureau, Claude: *See*—
Gerard, Jean-Louis; Lehureau, Claude; and Loret, Marc, 4,566,092, Cl. 369-59.000.

Leipelt, Rudolf: *See*—
Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.

Leir, Charles M., to Riker Laboratories, Inc. Process for 8-cyano-6,7-dihydro-5-methyl-1-oxo-1H,5H-benzo[ij]quinolizine-2-carboxylic acids and intermediates thereof. 4,565,872, Cl. 546-176.000.

Lenk, Erich: *See*—
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,565,524, Cl. 432-59.000.

Leprince, Jean-Bernard G. H.: *See*—
Laurendeau, Gilles H. Y.; and Leprince, Jean-Bernard G. H., 4,565,501, Cl. 417-267.000.

Lesueur, Pierre, to Everitube. Method and apparatus for loading tubular objects. 4,565,289, Cl. 206-443.000.

Leu, Willy, to Ferag AG. Apparatus for producing stacks of printed products provided with a cover sheet. 4,565,130, Cl. 101-240.000.

Leviton Manufacturing Company, Inc.: *See*—
Johnson, George E.; and Newman, Walter, 4,565,419, Cl. 339-154.00L.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal heterocyclic alkylaminocarbonylsulfonamides. 4,565,567, Cl. 71-92.000.

Lewis, Bernard L.; and Kretschmer, Frank F., Jr., to United States of America, Navy. Palindromic polyphase code expander-compressor. 4,566,011, Cl. 343-17.2PC.

Lewis, Henry G., Jr.; and Bolger, Thomas V., to RCA Corporation. Digital signal processing apparatus for processing dithered digital signals. 4,566,028, Cl. 358-21.00R.

Leyrer, Reinhold J.: *See*—
Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, 4,565,771, Cl. 430-307.000.

Liden, Hadar, to Gotaverken Arendal AB. Offshore vessel. 4,565,150, Cl. 114-265.000.

Lifeline Systems, Inc.: *See*—
Phillipps, Patrick G., 4,565,902, Cl. 179-5.00R.

Liggett, Paul E.; and Braun, David L., to Goodyear Aerospace Corporation. Polyurethane laminate of contrasting layers and process therefor. 4,565,729, Cl. 428-201.000.

Light, Glenn M.; and Van der Veer, William R., to Southwest Research Institute. Sound transducer apparatus system and method. 4,565,095, Cl. 73-621.000.

Lilja, Launo L.: *See*—
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.

Lin, Jerhong: *See*—
Walter, Robert J.; and Lin, Jerhong, 4,565,744, Cl. 428-570.000.

Linde Aktiengesellschaft: *See*—
Forster, Franz, 4,565,117, Cl. 92-20.000.

Linde, Rolf; and Klotz, Erhard, to U.S. Philips Corporation. Tomosynthesis apparatus. 4,566,112, Cl. 378-2.000.

Lindstrom, Paul, to Stal Refrigeration AB. Device for controlling the volumetric capacity of a screw compressor. 4,565,508, Cl. 418-201.000.

Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, to United States of America, Health and Human Services. Cell matrix receptor system and use in cancer diagnosis and management. 4,565,789, Cl. 436-504.000.

Lipe-Rollway Corporation: *See*—
Yanko, John P., 4,565,270, Cl. 192-70.130.

Lisle Corporation: *See*—
Williams, Danny L., 4,565,506, Cl. 417-440.000.

Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., to Texaco Inc. Process for the production of N-(3-dimethylaminopropyl)methacrylamide. 4,565,889, Cl. 564-205.000.

Llenado, Ramon A., to Procter & Gamble Company, The. Foaming surfactant compositions. 4,565,647, Cl. 252-354.000.

Loctite Corporation: *See*—
Drain, Kieran F.; and Dunn, David J., 4,565,837, Cl. 523-400.000.

Loepfe Brothers Limited: *See*—
Keller, Hans-Peter, 4,565,224, Cl. 139-370.200.

Loev, Bernard: *See*—
Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., 4,565,688, Cl. 424-3.000.

Lohmann, Dieter; and Wyler, Siegfried, to Ciba-Geigy Corporation. Silanes containing imide groups. 4,565,873, Cl. 548-110.000.

Long, Delmar D., to Dayco Corporation. Elastomer-coated bias reinforcement fabric and method for producing same. 4,565,715, Cl. 427-176.000.

Lonnoy, Jacques J.; and Mousson, Roland, to Societe Anonyme de Telecommunications. System for guiding a missile by a flat light pencil beam. 4,565,339, Cl. 244-3.130.

LOR, Inc.: *See*—
Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., 4,565,252, Cl. 175-269.000.

Loret, Marc: *See*—
Gerard, Jean-Louis; and Loret, Marc, 4,566,091, Cl. 369-47.000.
Gerard, Jean-Louis; Lehureau, Claude; and Loret, Marc, 4,566,092, Cl. 369-59.000.

Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, to Wacker-Chemie GmbH. Process for producing pyrogenic silicic acid with increased thickening effect. 4,565,682, Cl. 423-336.000.

Lotter, Bruno; Essig, Willi; and Mayer, Hans, to E.G.O. Elektro-Gerate Blanc u. Fischer. Temperature control apparatus. 4,565,989, Cl. 337-311.000.

Lovasz nee Gaspar, Marianna: *See*—
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.

Lubinsky, Anthony R., to Xerox Corporation. Hybrid development system. 4,565,437, Cl. 355-3.0DD.

Lucas Industries public limited company: *See*—
Potter, James C., 4,565,319, Cl. 239-88.000.

Luccarelli, Domenick, Jr.: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.

Ludwig, Bernhard, to Mannesmann Aktiengesellschaft. Water cooling apparatus for metal sheets and belts. 4,565,325, Cl. 239-597.000.

Lundgren, Bryan L.: *See*—
Bitter, Lowell E.; and Lundgren, Bryan L., 4,565,919, Cl. 219-509.000.

Lundman, Philip L. Inflatable apparatus for use in plugging a large diameter pipe. 4,565,222, Cl. 138-93.000.

Lupoli, Peter J.; and Westover, Brooke N., to Casco Products Corporation. Chime generator circuit for connection with existing automobile radio speaker. 4,565,991, Cl. 340-52.00R.

Lydersen, Aksel, to Sintef. Method for the removal of oxygen from water. 4,565,634, Cl. 210-718.000.

Lyman, Hugh M., Jr. Front-supported telescoping seating structure. 4,565,036, Cl. 52-9.000.

Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, to BASF Aktiengesellschaft. Production of gravure printing plates having plastic printing layers. 4,565,771, Cl. 430-307.000.

Lynch, Robert C.: *See*—
Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., 4,566,134, Cl. 455-607.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Bechtloff, Gert, 4,565,286, Cl. 198-861.100.

Mabuchi, Kenichi, to Bio Mabuchi Co. Ltd. Beauty treatment device. 4,565,189, Cl. 128-49.000.

MacCracken, Calvin D. Method of cyclic air conditioning with cogeneration of ice. 4,565,069, Cl. 62-66.000.

MacDonald, Robin B.: *See*—
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

MacGregor, Douglas B.: *See*—
Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, 4,566,063, Cl. 364-200.000.

Machholz, Adolf: *See*—
Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, 4,565,730, Cl. 428-204.000.

MacKenzie, Hugh R., to Polaroid Corporation. Image recording apparatus with adjustable mask. 4,566,015, Cl. 346-107.00R.

Mackowiak, David E.: *See*—
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.

MacLeod, Donald R., Jr., to Electric Power Research Institute, Inc. Armoring system for an airfoil centrifugal fan. 4,565,495, Cl. 416-224.000.

Macovski, Albert. Blood vessel projection imaging system using nuclear magnetic resonance. 4,565,968, Cl. 324-309.000.

Mactaggart, John W., to Sentrol Systems Ltd. Electronically scanned spectrometer color, brightness and opacity measurement and control system. 4,565,444, Cl. 356-73.000.

Maeda, Masanori: *See*—
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.
Maeda Metal Industries, Ltd.: *See*—
Fujita, Masahiro; and Uemura, Yukio, 4,565,112, Cl. 81-56.000.
Maeda, Shuichi: *See*—
Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, 4,566,032, Cl. 358-103.000.
Maerte, Leo: *See*—
Pfeiffer, Peter; and Maerte, Leo, 4,565,302, Cl. 222-38.000.
Maerz, Leslie R. Ice fishing device. 4,565,024, Cl. 43-17.000.
Magerl, Johann, to Siemens Aktiengesellschaft. Synchronous clock generator for digital signal multiplex devices. 4,566,099, Cl. 370-100.000.
Maier, Josef. Detachable gallery for use on buildings or the like. 4,565,261, Cl. 182-113.000.
Maier, Rudolf, to Battenfeld Fischer Blasformtechnik GmbH. Nozzle assembly for extruding a synthetic-resin tube. 4,565,515, Cl. 425-381.000.
Maille, Jacques H. P.: *See*—
Fleury, Joel J.; and Maille, Jacques H. P., 4,566,024, Cl. 357-32.000.
Makita, Fujio, to Fuji Jukogyo Kabushiki Kaisha. Gearshift apparatus for an automobile. 4,565,108, Cl. 74-475.000.
Makitalo, Valto J.: *See*—
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.
Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., to Technicon Instruments Corporation. Quaternized phthalocyanin derivatives. 4,565,688, Cl. 424-3.000.
Malinoff, Don W., to Culture-Tek. Pipette device. 4,565,100, Cl. 73-863.320.
Mallinckrodt, Inc.: *See*—
Sathe, Sharad S., 4,565,890, Cl. 564-216.000.
Manago, Takashi: *See*—
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.
Mannesmann Aktiengesellschaft: *See*—
Hasselmann, Heinz; Kunze, Volkmar; and Bitsch, Harald, 4,565,352, Cl. 254-344.000.
Ludwig, Bernhard, 4,565,325, Cl. 239-597.000.
Mannesmann Tally GmbH: *See*—
Pichler, Josef; Puchegger, Karl; and Starek, Bruno, 4,565,127, Cl. 101-93.040.
Mansson, Bjorn; Sirenius, Kurt; and Sundin, Birger, to AB Casco. Method for the production of particle boards. 4,565,662, Cl. 264-113.000.
Marangoni, Carlo. Apparatus for shaping in a calibrated way a rubber pre-extruded profiled member for regenerating tires and the like. 4,565,514, Cl. 425-328.000.
Marcellus, Michael: *See*—
Murka, August, Jr.; and Marcellus, Michael, 4,565,735, Cl. 428-234.000.
Marconi Company Limited, The: *See*—
Gratze, Stephen C., 4,565,983, Cl. 333-193.000.
Maremont Corporation: *See*—
Bunning, Ernst, 4,565,113, Cl. 89-1.400.
Scheidt, Wayne A.; and Paterick, Robert J., 4,565,260, Cl. 181-243.000.
Mariani, Elio A.: *See*—
Stern, Richard A.; and Mariani, Elio A., 4,565,982, Cl. 333-157.000.
Mark Telephone Products, Inc.: *See*—
Dimeff, John, 4,565,097, Cl. 73-765.000.
Marks, James R.: *See*—
Eisenbrandt, Gerald A.; and Marks, James R., 4,565,967, Cl. 324-95.000.
Marr, Donald, to British Telecommunications. Connection and inspection of optical fibres by fusion splicing. 4,565,593, Cl. 156-64.000.
Marschner, Frank W., to Colgate-Palmolive Company. Deodorant composition. 4,565,693, Cl. 424-67.000.
Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., to Microdynamics, Inc. Method and apparatus for automatically adjusting the sensitivity of edge sensors in a semi-automatic sewing machine. 4,565,140, Cl. 112-121.110.
Martin, John C.: *See*—
Verheyden, Julien P. H.; and Martin, John C., 4,565,868, Cl. 544-276.000.
Martin, John J.: *See*—
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.
Martin, John R.: *See*—
Gardner, Robert J.; and Martin, John R., 4,565,619, Cl. 204-400.000.
Martinez, Edward. Gravity—magnetic ore separators. 4,565,624, Cl. 209-40.000.
Marvin Glass & Associates: *See*—
Klimpert, Randall J.; and Meyer, Burton C., 4,565,537, Cl. 446-321.000.
Marx, John J., to Fraser Automation. Multiple plate clutch orienting fixture and method of using. 4,564,994, Cl. 29-468.000.
Maschinenfabrik Fr. Niepmann GmbH & Co.: *See*—
Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, 4,565,203, Cl. 131-283.000.
Maschinenfabrik Sulzer-Ruti AG: *See*—
Bertsch, Gotthilf, 4,565,225, Cl. 139-434.000.
Maschinenfabrik WIFAG: *See*—
von Hein, Eduard, 4,565,359, Cl. 270-41.000.
Massachusetts Institute of Technology: *See*—
Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., 4,565,599, Cl. 156-603.000.
Hubbard, James E., Jr., 4,565,940, Cl. 310-326.000.
Massee, Johan. Forming machine. 4,565,081, Cl. 72-19.000.
Masuda, Tatsunosuke, to Dainippon Screen Seizo K□bushiki Kaisha. Dual intensity laser beam picture recording method. 4,566,016, Cl. 346-108.000.
Masui, Tamenori; Ono, Hitoshi; and Ariyoshi, Toshihiko, to Nippon Steel Corporation. Method of and mold for continuously casting steel beam blanks. 4,565,236, Cl. 164-459.000.
Masumoto, Tsuyoshi: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.
Masuzawa, Motomu: *See*—
Hamada, Akio; Masuzawa, Motomu; and Matsuda, Yoshiaki, 4,565,484, Cl. 414-686.000.
Mathiesen, Mait M.; Gillberg, Lars I.; Hellsten, Karl M. E.; and Karlsson, Gunvor B. T., to AB Carbogel; and Berol Kemi AB. Aqueous slurry of a solid fuel and a process for the production thereof. 4,565,549, Cl. 44-51.000.
Mathis, Claude: *See*—
Francois, Bernard; and Mathis, Claude, 4,565,650, Cl. 252-518.000.
Mathyssek, Konrad: *See*—
Keil, Rudolf; and Mathyssek, Konrad, 4,565,558, Cl. 65-1.000.
Matrick, Howard, to Du Pont de Nemours, E. I., and Company. Dry nonelectroscopic toners surface coated with nonionic siloxane-oxyalkylene block copolymer. 4,565,773, Cl. 430-331.000.
Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, to Yoshida Kogyo K.K. Thread anchoring method and apparatus for use in winder. 4,565,331, Cl. 242-18.0PW.
Matsubayashi, Norio: *See*—
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.
Matsuda, Masaaki: *See*—
Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, 4,565,673, Cl. 423-112.000.
Matsuda, Setsuyuki: *See*—
Hirooka, Koichi; Matsuda, Setsuyuki; and Arahata, Yoshikuni, 4,565,901, Cl. 174-17.0GF.
Matsuda, Shigeki, to Nippondenso Co., Ltd. Method for forming a chemical conversion phosphate film on the surface of steel. 4,565,585, Cl. 148-6.15R.
Matsuda, Toshitsugu: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.
Matsuda, Yoshiaki: *See*—
Hamada, Akio; Masuzawa, Motomu; and Matsuda, Yoshiaki, 4,565,484, Cl. 414-686.000.
Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, to Matsushita Electric Industrial Co., Ltd. Rotary operation type miniaturized electronic component. 4,565,990, Cl. 338-171.000.
Matsumoto, Hiroshi: *See*—
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,565,569, Cl. 71-103.000.
Matsumoto, Mikio: *See*—
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.
Matsumura, Tetsuo: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.
Matsunami, Yukio: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.
Matsuo, Masaaki: *See*—
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, to Nippon-Telegraph and Telephone Public Corporation. Semiconductor device and manufacturing process thereof. 4,564,997, Cl. 29-576.00W.
Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, to Sanyo Electric Co., Ltd. Method of forming a separator for a cylindrical battery. 4,565,002, Cl. 29-623.400.
Matsuoka, Shigeki: *See*—
Takata, Akira; and Matsuoka, Shigeki, 4,565,960, Cl. 323-317.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, 4,565,990, Cl. 338-171.000.
Saito, Yukihiro; Ito, Yoshimasa; and Asakawa, Shiro, 4,565,846, Cl. 525-101.000.
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.
Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, 4,566,048, Cl. 360-94.000.
Yamanishi, Kazuhiro; and Mineo, Mino, 4,565,954, Cl. 318-603.000.
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.
Matsushita Electric Works, Ltd.: *See*—
Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, 4,565,916, Cl. 219-225.000.

Matsushita, Yasuo: *See*—
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, 4,565,907, Cl. 200-19.0DR.
Matsutani, Kinya; and Yokota, Toshikazu, to Kabushiki Kaisha Toshiba. Single crystal manufacturing apparatus. 4,565,671, Cl. 422-249.000.
Matsuura, Yoshikazu, to Teraoka Seiko Co., Ltd. Measuring apparatus. 4,565,254, Cl. 177-25.000.
Matsuzaka, Shoji: *See*—
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.
Mattei, Riccardo: *See*—
Seragnoli, Enzo; and Mattei, Riccardo, 4,565,202, Cl. 131-281.000.
Mattel, Inc.: *See*—
Cook, John S., 4,565,539, Cl. 446-462.000.
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Cable integrity by acoustic emission. 4,565,964, Cl. 324-51.000.
Mauries, Reinhard: *See*—
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,565,058, Cl. 57-22.000.
Maxwell, Charles E.: *See*—
Stokes, John H.; Clark, John I.; and Maxwell, Charles E., 4,565,995, Cl. 340-571.000.
Mayall, Phillip L.; and Whitten, Edward M. Marine observatory craft. 4,565,145, Cl. 114-61.000.
Mayenkar, Krishna V., to Harza Engineering Company. Removal of dissolved heavy metals from aqueous waste effluents. 4,565,633, Cl. 210-688.000.
Mayer, Camille. Seat mat assembly with headrests. 4,565,405, Cl. 297-230.000.
Mayer, Georg: *See*—
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.
Mayer, Hans: *See*—
Lotter, Bruno; Essig, Willi; and Mayer, Hans, 4,565,989, Cl. 337-311.000.
Mayer, Hans J.: *See*—
Bollag, Werner; Mayer, Hans J.; and Wyss, Pierre-Charles, 4,565,863, Cl. 536-18.200.
Mayer, Rolf: *See*—
Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., 4,565,332, Cl. 242-18.100.
Mazda Motor Corporation: *See*—
Ishimi, Haruyoshi; and Asanomi, Koji, 4,565,163, Cl. 123-41.440.
Mazeau, Jean P.: *See*—
Boudot, Jean E.; and Mazeau, Jean P., 4,565,791, Cl. 501-56.000.
Mazzarese, Joseph A. Building block with reinforcement and/or positioning lugs and recesses. 4,565,043, Cl. 52-593.000.
McBee, William D. Trash compactor. 4,565,126, Cl. 100-214.000.
McDaniel, Max P.: *See*—
Short, James N.; and McDaniel, Max P., 4,565,795, Cl. 502-110.000.
McDonald, Norman L.: *See*—
Castleberry, Kenneth B.; and McDonald, Norman L., 4,564,962, Cl. 4-543.000.
McEntire, Edward E.: *See*—
Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., 4,565,889, Cl. 564-205.000.
McGann, Leo E., to Singer Company, The. Sewing machine bed extension. 4,565,142, Cl. 112-260.000.
McGilp, Kenneth J.: *See*—
Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., 4,565,380, Cl. 277-178.000.
McGrail, John F.; and Kershaw, Roger F. Security hinge. 4,564,974, Cl. 16-353.000.
McIntyre, Frederic S., to Acumeter Laboratories, Inc. Three-way poppet valve, method and apparatus. 4,565,217, Cl. 137-625.500.
McKenzie, Michael P.: *See*—
Sarson, Gary A.; and McKenzie, Michael P., 4,566,096, Cl. 370-62.000.
McLaren, Keith: *See*—
Bradshaw, George M.; Desyllas, Peter L. L.; and McLaren, Keith, 4,566,104, Cl. 371-15.000.
McLaughlin, John R.: *See*—
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.
McLeod, Malcolm L., to Phillips Petroleum Company. Pipe alignment apparatus. 4,565,003, Cl. 29-281.100.
McNamee, Douglas D. Resealable bag and tamper proof sealing ring. 4,566,129, Cl. 383-5.000.
Mead Corporation, The: *See*—
Paranjpe, Suresh C.; Scott, Burton W.; and Kannapell, Henry N., 4,566,014, Cl. 346-1.100.
Spamer, William S.; and Preis, Alan D., 4,565,725, Cl. 428-167.000.
Medi-Physics, Inc.: *See*—
Hubbard, Robert E.; and Wedemeyer, Robert C., 4,565,301, Cl. 222-5.000.
Medica, Frank: *See*—
Aertker, Walter P.; Taylor, William L.; and Medica, Frank, 4,565,529, Cl. 440-7.000.
Medlock, Wayne D. Gauge for measuring clearance in the body side bearings of rail cars. 4,565,013, Cl. 33-517.000.
Medtronic, Inc.: *See*—
Cahalan, Patrick T.; and Schwinghammer, Michelle A., 4,565,666, Cl. 264-267.000.
Fogt, Eric J., 4,565,665, Cl. 264-267.000.
Jurva, Edsel O.; and Goodin, Richard L., 4,565,093, Cl. 73-40.700.
Medvedev, Oleg S.: *See*—
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Roznanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.
Meier, Ernst, to F.H.I. Finanz-, Handels und Investment AG. Apparatus for screening a stream of molten metal. 4,565,239, Cl. 164-475.000.
Meier, Jurgen: *See*—
Michalak, Stanislaw; Weber, Klaus-Dieter; and Meier, Jurgen, 4,565,679, Cl. 423-239.000.
Meier, Werner, to Sulzer Brothers Limited. Device for gravimetric distribution of liquid for mass and heat transfer columns. 4,565,216, Cl. 137-561.00A.
Meiller, Francois: *See*—
Le Du, Yannick; and Meiller, Francois, 4,565,635, Cl. 210-727.000.
Melamine Chemicals, Inc.: *See*—
Thomas, Roger E.; and Best, David E., 4,565,867, Cl. 544-201.000.
Melby, Phillip J.; and Koch, James J., to Melco Co Inc. Disposable smoke mask and apparatus. 4,565,196, Cl. 128-205.240.
Melco Co Inc.: *See*—
Melby, Phillip J.; and Koch, James J., 4,565,196, Cl. 128-205.240.
Menasian, David R. Vacuum collector. 4,565,555, Cl. 55-288.000.
Meneian, Harry, to Fleet Industries. Cable winder system. 4,565,333, Cl. 242-54.00R.
Merck & Co., Inc.: *See*—
Andrus, W. Alexander; Christensen, Burton G.; and Heck, James V., 4,565,808, Cl. 514-80.000.
Parks, Chris F., 4,565,640, Cl. 252-8.55R.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Bernhard, Horst, 4,565,581, Cl. 106-308.00B.
Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, to Burgmaster - Houdaille, Inc. Carousel pallet shuttle. 4,565,480, Cl. 414-225.000.
Merkle, Josef, to Daimler-Benz Aktiengesellschaft. Rocker arm mounting. 4,565,390, Cl. 280-726.000.
Meuret, Gerhard: *See*—
Weerda, Hilko; Meuret, Gerhard; and Pedersen, Peter, 4,565,194, Cl. 128-204.230.
Meyer, Burton C.: *See*—
Klimpert, Randall J.; and Meyer, Burton C., 4,565,537, Cl. 446-321.000.
Meyer, Horst: *See*—
Wehinger, Egbert; Meyer, Horst; Kazda, Stanislav; and Knorr, Andreas, 4,565,824, Cl. 514-356.000.
Meyer Manufacturing Company Limited: *See*—
Lam, Yanta, 4,565,296, Cl. 220-94.00R.
Meyer, Sylvain; Goloubkoff, Michel; and Guena, Jean. Multifunction ultra-high frequency circuit and means using such a circuit. 4,566,132, Cl. 455-86.000.
Meyer, Willy: *See*—
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,565,887, Cl. 564-85.000.
Mia-Lens Production A/S: *See*—
Larsen, Hans-Ole, 4,565,348, Cl. 249-122.000.
Michaely, William J.: *See*—
Curtis, Jeff K.; and Michaely, William J., 4,565,570, Cl. 71-105.000.
Michalak, Stanislaw; Weber, Klaus-Dieter; and Meier, Jurgen, to L. & C. Steinmuller GmbH. Method of regulating the amount of reducing agent added during catalytic reduction of NO_x contained in flue gases. 4,565,679, Cl. 423-239.000.
Michienzi, Giacomo F. Method of molding a shelter structure. 4,565,661, Cl. 264-34.000.
Microbial Chemistry Research Foundation: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.
Microdynamics, Inc.: *See*—
Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., 4,565,140, Cl. 112-121.110.
Midwest Instrument Co., Inc.: *See*—
Boron, Joseph J., 4,565,101, Cl. 73-864.570.
Mihara, Tadashi: *See*—
Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, 4,565,990, Cl. 338-171.000.
Mihara, Yoshiyuki: *See*—
Yaeo, Kenta; Kawamura, Shinji; and Mihara, Yoshiyuki, 4,565,720, Cl. 428-35.000.
Milbright, Arnold M.; and Hampe, Peter A., to International Telephone and Telegraph Corporation. Yoke for use with guyed structures. 4,565,038, Cl. 52-146.000.
Miller, Bradley W.: *See*—
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.
Miller, Gary E.: *See*—
Baskin, Joseph M.; Miller, Gary E.; and Wiesner, Wayne, 4,565,929, Cl. 290-44.000.

Miller, Gordon D.: *See*—
Daggs, Paul R.; Wilkowske, Arthur C.; and Miller, Gordon D., 4,565,466, Cl. 404-10.000.
Miller, Kevin P.: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.
Miller, Marvin J., to University of Notre Dame Du Lac. N-Acyloxy monocyclic β-lactams. 4,565,654, Cl. 260-239.00A.
Miller, Phillip J.; and Jassawalla, Jal S., to Novacor Medical Corporation. Pump actuator. 4,565,497, Cl. 417-63.000.
Millipore Corporation: *See*—
Nelson, Kenneth E., 4,565,447, Cl. 356-319.000.
Milovidov, Boris A.; Kaplunov, Iosif B., deceased; and by Kaplunova, Nadezhda V., administratix. Method of determining heat losses due to incomplete fuel combustion. 4,565,788, Cl. 436-137.000.
Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Splicing device for spun yarns. 4,565,059, Cl. 57-22.000.
Mims, Donald S.; and Allen, Richard S., to Texaco Inc. Completion for tar sand substrate. 4,565,245, Cl. 166-50.000.
Mimura, Yoshiyuki: *See*—
Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, 4,565,436, Cl. 355-3.00R.
Minakawa, Masaaki: *See*—
Kami, Yozo; Minakawa, Masaaki; and Kubo, Kanji, 4,565,389, Cl. 280-663.000.
Minami, Shozo: *See*—
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.
Mineo, Mino: *See*—
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Minker, Emil: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.
Minn, Andre B., to International Business Machines Corporation. Color cathode ray tube for use with a light pen. 4,565,947, Cl. 313-467.000.
Minn, Andre B.: *See*—
Barrett, William H.; and Minn, Andre B., 4,565,946, Cl. 313-408.000.
Minnesota Mining and Manufacturing Company: *See*—
Chang, John C.; and Williams, Kathryn L., 4,565,641, Cl. 252-8.750.
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased, 4,565,663, Cl. 264-120.000.
Fitzer, Robert C.; Fabbrini, Charles J.; and Deyak, Frank L., 4,565,842, Cl. 524-57.000.
Grant, Richard J., 4,565,857, Cl. 527-301.000.
Hansen, Paul E.; and Nelson, Robert L., 4,565,783, Cl. 435-299.000.
Huffman, William A.; and Novack, James C., 4,565,424, Cl. 350-349.000.
Koshar, Robert J., 4,565,714, Cl. 427-54.100.
Minoura, Kazuo, to Canon Kabushiki Kaisha. Plural-beam scanning apparatus. 4,565,421, Cl. 350-6.800.
Minshull, Kenneth N.: *See*—
Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., 4,565,380, Cl. 277-178.000.
Mirassou, Alfred: *See*—
Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, 4,565,893, Cl. 568-72.000.
Mishkin, Abraham R.: *See*—
Wertheim, John H.; and Mishkin, Abraham R., 4,565,706, Cl. 426-385.000.
Mr. Gasket Company: *See*—
Valdez, Henry R., 4,565,256, Cl. 180-68.500.
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, to Omron Tateisi Electronics Co. Light signal binary device with optical feedback. 4,565,924, Cl. 250-227.000.
Mito, Yutaka: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Hayase, Iwao, 4,565,746, Cl. 428-638.000.
Hirooka, Koichi; Matsuda, Setsuyuki; and Arahata, Yoshikuni, 4,565,901, Cl. 174-17.0GF.
Ikegami, Takashi; and Mori, Masakazu, 4,565,936, Cl. 310-62.000.
Kaiko, Akira, 4,565,952, Cl. 318-345.00R.
Kime, Kenjiro, 4,566,089, Cl. 369-45.000.
Kunii, Kazushi, 4,565,264, Cl. 187-89.000.
Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.
Otsuka, Shigeharu; and Mizuno, Yuji, 4,565,987, Cl. 335-131.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, 4,565,471, Cl. 408-204.000.
Mitsubishikaseikogyo Kabushikikaisha: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.
Mitsuhashi, Yasuo; and Uchiyama, Masaki, to Canon Kabushiki Kaisha. Developing powder. 4,565,766, Cl. 430-126.000.
Mitsuhashi, Yasuo: *See*—
Uchiyama, Masaki; and Mitsuhashi, Yasuo, 4,565,763, Cl. 430-109.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Kobayashi, Kazusuke; and Cho, Ryokche, 4,565,840, Cl. 524-8.000.
Miura, Genmei; Konno, Akira; and Konishi, Motofumi, to Canon Kabushiki Kaisha. Data output apparatus capable of rotating data output therefrom relative to data input thereto. 4,566,002, Cl. 340-727.000.
Miura, Tetsuro: *See*—
Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, 4,565,914, Cl. 219-68.000.
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, to Fuji Electric Company, Ltd. Pattern discriminator. 4,566,126, Cl. 382-48.000.
Miyahara, Masayoshi; and Takagi, Masao, to Kubota, Ltd. PTO-Driving of double-clutch-incorporated type transmission. 4,565,102, Cl. 74-15.400.
Miyahara, Takashi, to Nippon Seiko Kabushiki Kaisha. Self-aligning type clutch release apparatus. 4,565,272, Cl. 192-98.000.
Miyake, Tamio: *See*—
Iida, Takayuki; and Miyake, Tamio, 4,565,456, Cl. 374-169.000.
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic materials. 4,565,778, Cl. 430-567.000.
Miyano, Masateru; and Shone, Robert L., to G. D. Searle & Co. Substituted dihydrobenzopyran-2-carboxylates. 4,565,882, Cl. 549-399.000.
Miyao, Masanobu: *See*—
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.
Miyao, Shigeru: *See*—
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, 4,566,127, Cl. 382-56.000.
Miyata, Kazutoshi: *See*—
Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, 4,565,670, Cl. 422-186.040.
Miyata, Teruo; and Namiki, Shinichi, to Koken Co., Ltd. Substrate consisting of regenerated collagen fibrils and method of manufacturing same. 4,565,580, Cl. 106-124.000.
Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Heat treating apparatus using microwaves. 4,565,670, Cl. 422-186.040.
Miyazaki, Yasuharu: *See*—
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.
Mizota, Hisakazu: *See*—
Kojima, Shinji; Mizota, Hisakazu; Kodama, Masanori; and Miyazaki, Yasuharu, 4,565,238, Cl. 164-468.000.
Mizuno, Tiaki: *See*—
Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, 4,565,091, Cl. 73-118.000.
Mizuno, Toshio; Satoh, Gunkichi; and Ohkawa, Michihisa, to Kokusai Denshin Denwa Co., Ltd. Bit error rate measuring system. 4,566,100, Cl. 371-5.000.
Mizuno, Yuji: *See*—
Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, 4,565,986, Cl. 335-131.000.
Otsuka, Shigeharu; and Mizuno, Yuji, 4,565,987, Cl. 335-131.000.
Mizushima, Yoshihiro: *See*—
Ohnishi, Katsumi; Mizushima, Yoshihiro; and Sato, Kiyosumi, 4,566,062, Cl. 364-200.000.
Mobil Oil Corporation: *See*—
Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., 4,565,847, Cl. 525-240.000.
Burress, George T., 4,565,899, Cl. 585-445.000.
Clauson, Melvil B.; and Wagner, John R., Jr., 4,565,739, Cl. 428-349.000.
Kuhl, Gunter H., 4,565,681, Cl. 423-328.000.
Pebdani, Farrokh N.; and Shu, Winston R., 4,565,249, Cl. 166-303.000.
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, to Nissan Motor Co., Ltd.; and Kokusan Kinzoku Kogyo Co., Ltd. Detecting device for detecting the removal of a cylinder lock. 4,565,994, Cl. 340-542.000.
Mochizuki, Junichiro: *See*—
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.
Moessner, Heinz E.; and Albrecht, Hans P. Roller blind unit. 4,565,231, Cl. 160-133.000.
Moller, Heinz: *See*—
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Molnlycke Aktiebolag: *See*—
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Monarch Knitting Machinery Corporation: *See*—
Nishikawa, Masao; and Saibe, Seiichi, 4,565,047, Cl. 53-137.000.
Mondini, Giancarlo; and Schmid, Rene, to Rieter Machine Works Limited. Method and apparatus for forming a lap. 4,565,337, Cl. 242-66.000.
Monnig, Kenneth A.: *See*—
Brors, Daniel L.; Fair, James A.; and Monnig, Kenneth A., 4,565,157, Cl. 118-719.000.

Monroe, Bruce M.: *See*—
Dueber, Thomas E.; and Monroe, Bruce M., 4,565,769, Cl. 430-281.000.
Monsanto Company: *See*—
Ebner, Jerry R., 4,565,658, Cl. 260-465.300.
Runkle, Charles J., 4,565,630, Cl. 210-321.100.
Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., to Phillips Petroleum Company. Crude oil refining. 4,565,620, Cl. 208-80.000.
Moore, Roy J., to Canron Corp. Clamp arrangement for track lifting and aligning device. 4,565,133, Cl. 104-7.00B.
Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., to Northern Telecom Limited. Touch strip input for display terminal. 4,566,001, Cl. 340-711.000.
Moreau, Jacques-Pierre: *See*—
Kim, Sun H.; and Moreau, Jacques-Pierre, 4,565,815, Cl. 514-246.000.
Moreland, John M.: *See*—
Hansma, Paul K.; Moreland, John M.; and Alexander, Sam, 4,566,023, Cl. 357-26.000.
Morford, Marvin A. Tiltable supporting wheelchair. 4,565,385, Cl. 280-289.0WC.
Morgan, Marshall M. Ice tray for use with a portable ice chest. 4,565,074, Cl. 62-457.000.
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, to Japan Crown Cork Co Ltd. Plastic container closure having pilferproof characteristics. 4,565,295, Cl. 215-252.000.
Mori, Kei. Foundation for mounting solar ray collecting devices. 4,565,185, Cl. 126-417.000.
Mori, Masakazu: *See*—
Ikegami, Takashi; and Mori, Masakazu, 4,565,936, Cl. 310-62.000.
Morimoto, Kiyoshi; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Boron nitride film and process for preparing same. 4,565,741, Cl. 428-427.000.
Morino, Ronald: *See*—
Burr, Robert P.; Keogh, Raymond J.; Morino, Ronald; Crowell, Jonathan C.; Burr, James B.; and Christophersen, James C., 4,565,966, Cl. 324-73.0PC.
Morita, Takayuki: *See*—
Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.
Moriyama, Naoki; Koike, Hiroshi; and Hatakeyama, Osamu, to Alps Electric Co., Ltd. Rotary wheel printer. 4,565,128, Cl. 101-93.190.
Morley, Robin C.; and Sharma, Shri C., to Warner-Lambert Company. Dietary fiber food products and method of manufacture. 4,565,702, Cl. 426-93.000.
Morris, Russell W.: *See*—
Samuel, Robert A.; Selke, Gary J.; and Morris, Russell W., 4,566,035, Cl. 358-244.000.
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., to Hewlett-Packard Company. Programmable calculator including means for digitizing the position of an X-Y plotter pen. 4,566,072, Cl. 364-520.000.
Moser, Winfried: *See*—
Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, 4,565,087, Cl. 73-35.000.
Motonaga, Hideo; and Naito, Masahiro, to Shino-Test Laboratory Co., Ltd. Method for determination of cholinesterase activity. 4,565,780, Cl. 435-20.000.
Motoren- und Turbinen-Union Friedrichshafen GmbH: *See*—
Haide, Karl, 4,565,489, Cl. 415-53.00R.
Motorola, Inc.: *See*—
Brookshire, Daniel A., 4,565,971, Cl. 330-9.000.
Kuo, Clinton C. K.; and Dehganpour, Sam, 4,565,932, Cl. 307-264.000.
Suckle, Leonard I., 4,566,117, Cl. 381-51.000.
Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, 4,566,063, Cl. 364-200.000.
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, to Siemens Aktiengesellschaft; Thomson-CSF; L.C.C.-C.I.C.E.; and U.S. Philips Corp. Electric coil with secured cores. 4,565,988, Cl. 336-192.000.
Mousson, Roland: *See*—
Lonnoy, Jacques J.; and Mousson, Roland, 4,565,339, Cl. 244-3.130.
Mouzavires, William E.: *See*—
Karlsson, Karl A., 4,565,470, Cl. 408-72.00R.
Muck, Jack E., to AccuSpray, Inc. Compressor. 4,565,488, Cl. 415-53.00R.
Muhlhofer, Ernst: *See*—
Loskot, Stephen; Kratel, Gunter; Lang, Wilfried; and Muhlhofer, Ernst, 4,565,682, Cl. 423-336.000.
Muller, Franz-Josef; Krutten, Viktor; and Krick, Gerd, to Fresenius AG. Device for introducing a catheter. 4,565,544, Cl. 604-164.000.
Muller, Jean-Claude: *See*—
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, 4,565,869, Cl. 544-323.000.
Muller, Robert, to Dr. Ing. h.c.F. Porsche A.G. Ball through-passage for the gearshifting lever of a motor vehicle. 4,565,107, Cl. 74-473.00P.
Muller, Willi: *See*—
Hoffacker, Gerd; and Muller, Willi, 4,565,608, Cl. 204-44.000.
Muller, Wolfgang: *See*—
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.
Mullies, Jarrell W.: *See*—
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.
Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., to Allied Corporation. Process and apparatus for applying and confining finish. 4,565,154, Cl. 118-410.000.
Mullins, Ronald L.: *See*—
Carpenter, James H., Jr.; and Mullins, Ronald L., 4,565,035, Cl. 51-434.000.
Multinorm B.V.: *See*—
Vissers, Hermanus H.; and Wondergem, Jan, 4,565,057, Cl. 56-364.000.
Mulvey, Patricia S.; Barth, Jordan B.; and Vellekoop, Linda J., to Colgate-Palmolive Company. Extrudable dentifrice. 4,565,692, Cl. 424-57.000.
Murai, Takaaki; Watanabe, Shoji; Inoue, Kimio; and Yagii, Toyokazu, to Daicel Chemical Industries, Ltd. Polyether compounds, epoxy resins, epoxy resin compositions, and processes for production thereof. 4,565,859, Cl. 528-365.000.
Muralidhara, Ranya: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., 4,565,707, Cl. 426-535.000.
Muramatsu, Hiromochi; and Watanabe, Atsushi, to Nippondenso Co., Ltd. Electrode for organic battery. 4,565,754, Cl. 429-213.000.
Muramatsu, Shigeru: *See*—
Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.
Muramoto, Susumu: *See*—
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.
Murata Kikai Kabushiki Kaisha: *See*—
Mima, Hiroshi, 4,565,059, Cl. 57-22.000.
Murata Manufacturing Co., Ltd.: *See*—
Sakai, Katsumi; and Toyoshima, Isao, 4,565,942, Cl. 310-338.000.
Murka, August, Jr.; and Marcellus, Michael, to Huyck Corporation. Papermakers' felt. 4,565,735, Cl. 428-234.000.
Murofushi, Yasuyuki; Ishikawa, Masazumi; and Kawai, Mikio, to Nissan Motor Co., Ltd. Polymer of triphenylamine. 4,565,860, Cl. 528-422.000.
Murphy, Betty J.: *See*—
Smith, James A.; and Murphy, Betty J., 4,565,644, Cl. 252-92.000.
Murphy, Richard D.: *See*—
Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., 4,566,101, Cl. 371-5.000.
Murray, David E.: *See*—
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.
Musick, Jeff L.; Blaker, Robert D.; and Blaker, David G., to Bed-Check Corporation. Switch apparatus responsive to distortion. 4,565,910, Cl. 200-85.00R.
Musschoot, Albert, to General Kinematics Corporation. Product accumulating conveyor apparatus and method. 4,565,279, Cl. 198-505.000.
Nabisco Brands, Inc.: *See*—
Arciszewski, Henry; Porzio, Linda A.; and Chiang, Bin Y., 4,565,089, Cl. 78-82.000.
Nagai, Koichi: *See*—
Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, 4,565,801, Cl. 502-209.000.
Naganawa, Hiroshi: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.
Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Current supply circuit with redundant back-up current source. 4,565,959, Cl. 323-315.000.
Nagano, Katsumi, to Kabushiki Kaisha Toshiba. Gyrator. 4,565,962, Cl. 323-351.000.
Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Current amplifying circuit. 4,565,973, Cl. 330-288.000.
Nagao, Naotake: *See*—
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.
Nagase, Hidenobu; and Hirayama, Takayuki, to Honda Giken Kogyo Kabushiki Kaisha. Supercharger control system for internal combustion engines. 4,565,178, Cl. 123-564.000.
Nagel, Dietmar: *See*—
Kennedy, Melvin R.; Nagel, Dietmar; and Arad, Abraham A., 4,565,538, Cl. 446-427.000.
Nahara, Akira: *See*—
Arai, Yoshihiro; Nahara, Akira; and Fukino, Kiyotaka, 4,565,734, Cl. 428-216.000.
Naito, Masahiro: *See*—
Motonaga, Hideo; and Naito, Masahiro, 4,565,780, Cl. 435-20.000.
Naka, Hideo: *See*—
Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, 4,565,832, Cl. 521-63.000.
Naka, Masayasu, to Kyowa Kentetsu Kabushiki Kaisha. Right-angle index device. 4,565,005, Cl. 33-1.00G.
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, to Research Development Corporation; Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi. Boron nitride containing titanium nitride, method of producing the same and composite ceramics produced therefrom. 4,565,747, Cl. 428-698.000.

Nakagawa, Katsumi: *See—*
Komatsu, Toshiyuki; Hirai, Yutaka; Nakagawa, Katsumi; and Fukuda, Tadaji, 4,565,731, Cl. 428-212.000.

Nakagawa, Katsuyuki: *See—*
Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, 4,565,526, Cl. 433-8.000.

Nakagawa, Masaya: *See—*
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Nakahara, Toshiaki; Ohsaki, Ichiro; and Ushiyama, Hisayuki, to Canon Kabushiki Kaisha. Microcapsule toner and process of making same. 4,565,764, Cl. 430-111.000.

Nakajima, Hidemasa: *See—*
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, to Kabushiki Kaisha Kobe Seikosho; Mitsubishikaseikogyo Kabushikikaisha; Idemitsukosan Kabushiki Kaisha; Aziaseiyu Kabushiki Kaisha; and Nippon Kattan Ekika Kabushiki Kaisha. Method of liquefying brown coal. 4,565,622, Cl. 208-10.000.

Nakamura, Keijiro: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiro; and Iike, Masanori, 4,565,998, Cl. 340-645.000.

Nakamura, Masahiro, to Kawasaki Jukogyo Kabushiki Kaisha. Fluidized bed combustion furnace. 4,565,136, Cl. 110-245.000.

Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, to Yoshino Kogyosho Co., Ltd. Cream-state fluid container. 4,565,306, Cl. 222-383.000.

Nakano, Asao; and Hiratsuka, Yutaka, to Hitachi, Ltd. Soft X-ray generator. 4,566,116, Cl. 378-121.000.

Nakanome, Noboru: *See—*
Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, 4,565,002, Cl. 29-623.400.

Nakase, Ryoichi, to Sanshin Kogyo Kabushiki Kaisha. Tilting mechanism for marine propulsion device. 4,565,528, Cl. 440-1.000.

Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, to Fanuc Ltd. Double hand for an industrial robot. 4,565,400, Cl. 294-88.000.

Nakatani, Hiroshi: *See—*
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.

Nakayama, Yasuharu, to Kansai Paint Co., Ltd. Aqueous emulsion composition. 4,565,839, Cl. 524-458.000.

Nakazato, Norio: *See—*
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.

Nakazato, Yoshio: *See—*
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Namiki, Shinichi: *See—*
Miyata, Teruo; and Namiki, Shinichi, 4,565,580, Cl. 106-124.000.

Nankoso Ltd.: *See—*
Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.

Narasimhan, Kalatur S. V. L., to Crucible Materials Corporation. Permanent magnet alloy. 4,565,587, Cl. 148-31.570.

Nath, Prem: *See—*
Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, 4,565,607, Cl. 204-38.100.

Nation, Melvin S., to International Jensen Incoporated. Loudspeaker construction. 4,565,905, Cl. 179-115.5PC.

National Plastics Limited: *See—*
Jonas, Thomas S., 4,565,293, Cl. 215-246.000.

Natsuaki, Nobuyoshi: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

Naumann, Robert J.; and Ethridge, Edwin C., to United States of America, National Aeronautics and Space Administration. Containerless high purity pulling process and apparatus for glass fiber. 4,565,557, Cl. 65-1.000.

NCR Corporation: *See—*
Anderson, Jeff L., 4,566,086, Cl. 369-13.000.

Neal, James G.: *See—*
Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., 4,565,154, Cl. 118-410.000.

Nedelec, Lucien; Torelli, Vesperto; and Hardy, Michel, to Roussel Uclaf. Preparation of 17β-hydroxyacetyl-17α-ol-steroids. 4,565,656, Cl. 260-397.470.

Nee, Monika: *See—*
Wagner, Heinz; Scharwaechter, Klaus; and Nee, Monika, 4,565,611, Cl. 204-44.500.

Needs, Howard C.; and Blok, Lodewijk, to U.S. Philips Corporation. Color imaging device. 4,565,756, Cl. 430-7.000.

Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, to Mitsubishi Kinzoku Kabushiki Kaisha. Drill bit. 4,565,471, Cl. 408-204.000.

Nelson, Kenneth E., to Millipore Corporation. Photometric apparatus with multi-wavelength excitation. 4,565,447, Cl. 356-319.000.

Nelson, Robert L.: *See—*
Hansen, Paul E.; and Nelson, Robert L., 4,565,783, Cl. 435-299.000.

Nestec S.A.: *See—*
Dagerskog, Magnus; Ganrot, Anders B.; and Jonsson, Kurt O. G., 4,565,704, Cl. 426-233.000.
Wertheim, John H.; and Mishkin, Abraham R., 4,565,706, Cl. 426-385.000.

Neumann, Peter, to Sandoz Ltd. Piperazine derivatives and pharmaceutical composition containing them. 4,565,816, Cl. 514-253.000.

Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., to Precision Tube Bending. Seal with two sealing portions having flange receiving opening therebetween. 4,565,380, Cl. 277-178.000.

Newman, Walter: *See—*
Johnson, George E.; and Newman, Walter, 4,565,419, Cl. 339-154.00L.

Newton, Charles L.: *See—*
Cardin, William J.; Gulla, Michael; and Newton, Charles L., 4,565,575, Cl. 106-1.220.

Nicholas, Cynthia L.; Kornfeld, Edmund C.; and Schaus, John M., to Eli Lilly and Company. 1-Alkyl-6-pyrrolidino-octahydroquinolines. 4,565,871, Cl. 546-165.000.

Nickel, Herbert W., to A. O. Smith Corporation. Bushing construction for a fiber reinforced plastic leaf spring. 4,565,356, Cl. 267-54.00R.

Nickerson, Earl W.: *See—*
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.

Nickerson, Rand B.; and Welsh, Russell J., to CTBA Associates. Television viewer data collection system. 4,566,030, Cl. 358-84.000.

Nickolay, Helmut, to Zinser Textilmaschinen GmbH. Thread and yarn end retrieval nozzle. 4,565,062, Cl. 57-305.000.

Nieh, Edward C.: *See—*
Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., 4,565,889, Cl. 564-205.000.

Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanoers, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., to U.S. Philips Corporation. Loudspeaker system and loudspeaker for use in a loud-speaker system for converting an n-bit digitized electric signal into an acoustic signal. 4,566,120, Cl. 381-117.000.

Nifco Inc.: *See—*
Omata, Nobuaki, 4,565,266, Cl. 188-322.500.

Nihon Early Kabushiki Kaisha (Japan Early Co., Ltd.): *See—*
Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.

Nikka Chemical Industry Co.: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.

Nikkel, Willem A.: *See—*
DeLigt, John; and Nikkel, Willem A., 4,565,049, Cl. 53-415.000.

Nilsson, Kenth, to Siemens Aktiengesellschaft; and Siemens Eleman AB. Method and transducer for increasing inking resolution in an ink-mosaic recording device. 4,566,017, Cl. 346-140.00R.

Nilsson, Kenth, to Siemens Aktiengesellschaft. Recorder operating with drops of liquid. 4,566,018, Cl. 346-140.00R.

Nilsson, Sven W., to SKF Nova AB. Clamping joint. 4,565,464, Cl. 403-290.000.

Nimrod Press, Inc., The: *See—*
Thies, Curt, 4,565,841, Cl. 524-31.000.

Nippon Felt Co., Ltd.: *See—*
Tanabe, Takeo, 4,564,985, Cl. 28-142.000.

Nippon Kattan Ekika Kabushiki Kaisha: *See—*
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Nippon Kogaku K.K.: *See—*
Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, 4,566,037, Cl. 358-213.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Miyahara, Takashi, 4,565,272, Cl. 192-98.000.

Nippon Steel Corporation: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.
Masui, Tamenori; Ono, Hitoshi; and Ariyoshi, Toshihiko, 4,565,236, Cl. 164-459.000.
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, 4,565,479, Cl. 414-199.000.

Nippon-Telegraph and Telephone Public Corporation: *See—*
Matsuo, Seitaro; Muramoto, Susumu; Ehara, Kohei; and Itsumi, Manabu, 4,564,997, Cl. 29-576.00W.
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.

Nippon Yusoki Co., Ltd.: *See—*
Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, 4,566,032, Cl. 358-103.000.

Nippondenso Co., Ltd.: *See—*
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,565,072, Cl. 62-196.200.
Ito, Katsunori; Akiyama, Susumu; Mizuno, Tiaki; Yamada, Toshitaka; and Abe, Tomoaki, 4,565,091, Cl. 73-118.000.
Matsuda, Shigeki, 4,565,585, Cl. 148-6.15R.
Muramatsu, Hiromochi; and Watanabe, Atsushi, 4,565,754, Cl. 429-213.000.

Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Heat-sensitive transfer material. 4,565,737, Cl. 428-321.500.

Nishikawa, Masao; and Saibe, Seiichi, to Monarch Knitting Machinery Corporation; and Takatori Machinery Mfg. Co., Ltd. Apparatus for packaging folded hosiery. 4,565,047, Cl. 53-137.000.

Nishikawa, Masao; and Sakurai, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Direct-coupling clutch control device for a torque converter in vehicular automatic transmission. 4,565,267, Cl. 192-3.310.

Nishikawa, Mineki, to Tokyo Shibaura Denki Kabushiki Kaisha. Scintillation camera. 4,566,074, Cl. 364-571.000.

Nishikawa, Susumu: *See—*
Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, 4,565,067, Cl. 60-545.000.

Nishimura, Motoyasu: *See—*
Fujioka, Isami; Imada, Kazutoshi; Nishimura, Motoyasu; and Ishibashi, Takayuki, 4,565,579, Cl. 106-118.000.

Nishishita, Koji: *See—*
Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, 4,565,002, Cl. 29-623.400.

Nishiyama, Takashi. Device for fixing a belt of goggles. 4,564,960, Cl. 2-452.000.

Nishizawa, Jun-ichi; and Okuno, Yasuo, to Zaidan Hojin Handotai Kenkyu Shinkokai. Apparatus for performing solution growth relying on temperature difference technique. 4,565,156, Cl. 118-412.000.

Nissan Motor Co., Ltd.: *See—*
Fujita, Masahiro; and Uemura, Yukio, 4,565,112, Cl. 81-56.000.
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.
Murofushi, Yasuyuki; Ishikawa, Masazumi; and Kawai, Mikio, 4,565,860, Cl. 528-422.000.
Oshiage, Katsunori; and Hosaka, Akio, 4,565,173, Cl. 123-458.000.
Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, 4,565,162, Cl. 123-41.080.
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,565,997, Cl. 340-576.000.

Nitta, Shouetsu: *See—*
Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, 4,565,331, Cl. 242-18.0PW.

Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., to LeaRonal, Inc. Bath and process for plating tin, lead and tin-lead alloys. 4,565,609, Cl. 204-44.400.

Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., to LeaRonal, Inc. Bath and process for plating lead and lead/tin alloys. 4,565,610, Cl. 204-44.400.

Noble, Haven D.: *See—*
Evans, William C.; and Noble, Haven D., 4,565,441, Cl. 355-37.000.

Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of making a semiconductor read only memory. 4,565,712, Cl. 427-53.100.

Noguchi, Kazuma: *See—*
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Noguchi, Yuuichi: *See—*
Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, 4,565,331, Cl. 242-18.0PW.

Nomura, Hiroaki: *See—*
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,565,865, Cl. 544-110.000.

Nomura, Kenichi: *See—*
Suzuki, Makoto; and Nomura, Kenichi, 4,565,174, Cl. 123-478.000.

Nonaka, Yoshiyuki: *See—*
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.

Nonogaki, Saburo; and Hashimoto, Michiaki, to Hitachi Chemical Company, Ltd. Photosensitive azide composition with alkali soluble polymer and process of using to form resist pattern. 4,565,768, Cl. 430-197.000.

Nordmann, Rene ; and Petcher, Trevor J., to Sandoz Ltd. Pharmaceutically active 1,2,3,4,4a,5,10,10a-octahydro-benzo[g]quinoline derivatives. 4,565,818, Cl. 514-290.000.

Norris, Charles R., to Weyerhaeuser Company. Case closing apparatus. 4,565,050, Cl. 53-491.000.

Norrod, Lutro. Apparatus for fitting a boot to a universal joint. 4,564,988, Cl. 29-235.000.

North American Philips Consumer Electronics Corp.: *See—*
Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., 4,565,945, Cl. 313-404.000.

Northern Telecom Limited: *See—*
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., 4,566,098, Cl. 370-89.000.
Moore, Timothy G.; Dockendorff, David G.; and Harris, Stephen J., 4,566,001, Cl. 340-711.000.
Shannon, Michael A., 4,565,591, Cl. 156-51.000.
Sims, Dewey M., Jr.; and Haas, Robert T., 4,566,049, Cl. 360-106.000.

Northwestern University: *See—*
Pirmantgen, Robert E.; Adamski, John S.; and Devens, Mark F., 4,565,190, Cl. 128-80.00C.

Norton Company: *See—*
Knapp, Christopher E., 4,565,792, Cl. 501-104.000.

Notagashira, Hidehumi, to Canon Kabushiki Kaisha. Signal transferring device for photographic instrument or accessory. 4,565,434, Cl. 354-286.000.

Novack, James C.: *See—*
Huffman, William A.; and Novack, James C., 4,565,424, Cl. 350-349.000.

Novacor Medical Corporation: *See—*
Miller, Phillip J.; and Jassawalla, Jal S., 4,565,497, Cl. 417-63.000.

Nowack, William C. Method for the removal and disposal of paint solvent. 4,565,553, Cl. 55-59.000.

Nowak, James M.: *See—*
Espelage, Paul M.; and Nowak, James M., 4,565,953, Cl. 318-345.00E.

NSK-Warner K.K.: *See—*
Kawai, Osamu, 4,565,391, Cl. 280-804.000.

N.V. Nederlandsche Apparatenfabriek Nedap: *See—*
Hoeksma, Gerben S., 4,566,060, Cl. 363-21.000.

Nyman, Bror G.: *See—*
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.

Nytomt, Jan G.; Ottosson, Lars-Olof; and Agren, Nils A., to Aktiebolaget Svenska Elektromagneter. Apparatus in magneto ignition systems for providing time-separated sequences for charging and triggering in co-phased charging and triggering voltage sequences, including inhibition of the ignition sequence in such apparatus. 4,565,179, Cl. 123-599.000.

O&K Orenstein & Koppel Aktiengesellschaft: *See—*
Dengs, Bernd; and Dyson, Neil, 4,565,276, Cl. 198-321.000.

O-M Limited: *See—*
Kase, Hiroshi, 4,564,995, Cl. 29-563.000.

Obara, Isao: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.

Oberst, Steven M., to Acorn Box Company. Connectors for corrugated materials. 4,565,465, Cl. 403-407.100.

Obrecht, Georges, to Alsthom-Atlantique. Small deflection coupling for oscillating shafts. 4,565,541, Cl. 464-155.000.

Ochii, Kiyofumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device with spare memory cells. 4,566,081, Cl. 365-200.000.

O'Connor, Joseph M.; and Pasternak, Stephen F., to Peerless of America, Inc. Tubular articles of manufacture and method of making same. 4,565,244, Cl. 165-181.000.

Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., to Upjohn Company, The. Diisocyanate. 4,565,835, Cl. 521-155.000.

Officine Savio S.p.A.: *See—*
Gordini, Dovilio, 4,565,060, Cl. 57-58.300.

Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materials. 4,565,777, Cl. 430-552.000.

Ogawa, Hiroshi: *See—*
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.

Ogawa, Riichi: *See—*
Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, 4,565,306, Cl. 222-383.000.

Ogden, Ralph; and Eich, Patrick H. Method and means of manual input of programs into industrial process programmable controller systems. 4,566,061, Cl. 364-146.000.

Ogita, Hideo: *See—*
Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, 4,565,306, Cl. 222-383.000.

Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic recording media having ferromagnetic and ferrite particles in the magnetic layer thereof. 4,565,726, Cl. 428-328.000.

Oguchi, Yoshihiro: *See—*
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 4,565,761, Cl. 430-83.000.

Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, to Ohbayashi-Gumi, Ltd.; and Tokico Ltd. Floor structure for reducing vibration. 4,565,039, Cl. 52-167.000.

O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., to UOP Inc. Dehydrogenation of dehydrogenatable hydrocarbons. 4,565,898, Cl. 585-441.000.

Ohara, Shunji: *See—*
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, 4,566,088, Cl. 369-44.000.

Ohashi, Yutaka: *See—*
Kitaura, Tomimaro; Ohashi, Yutaka; and Yoneda, Masami, 4,566,107, Cl. 372-38.000.

Ohata, Isao; and Sakamoto, Nobuo, to Yamanouchi Pharmaceutical Co., Ltd. Medical agent for suppressing arteriosclerosis. 4,565,823, Cl. 514-356.000.

Ohbayashi-Gumi, Ltd.: *See—*
Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, 4,565,039, Cl. 52-167.000.

Ohkawa, Michihisa: *See—*
Mizuno, Toshio; Satoh, Gunkichi; and Ohkawa, Michihisa, 4,566,100, Cl. 371-5.000.

Ohki, Kouichi: *See—*
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,566,126, Cl. 382-48.000.

Ohkura, Makoto: *See—*
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

Ohmizu, Akimasa: *See—*
Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,651, Cl. 260-112.00B.
Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, 4,565,697, Cl. 424-89.000.

Ohmura, Takao; Hirao, Yutaka; Hanamura, Takuji; Ohmizu, Akimasa; and Funakoshi, Satoshi, to Green Cross Corporation, The. Method of lyophilizing cold insoluble globulin. 4,565,651, Cl. 260-112.00B.

Ohmura, Takao; Fujiwara, Terufumi; Ohmizu, Akimasa; and Funakoshi, Satoshi, to Green Cross Corporation. Process for producing a hepatitis B infection preventing vaccine. 4,565,697, Cl. 424-89.000.

Ohnishi, Katsumi; Mizushima, Yoshihiro; and Sato, Kiyosumi, to Fujitsu Limited. Timing control system in data processor. 4,566,062, Cl. 364-200.000.

Ohsaki, Ichiro: *See*—
Nakahara, Toshiaki; Ohsaki, Ichiro; and Ushiyama, Hisayuki, 4,565,764, Cl. 430-111.000.

Ohta, Ken-Ichiro: *See*—
Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.

Ohta, Yoshitaka: *See*—
Shimoda, Mituhiko; Koinuma, Masahiro; and Ohta, Yoshitaka, 4,566,054, Cl. 361-422.000.

Ohtake, Yasuhisa; and Tanaka, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing shadow mask. 4,565,755, Cl. 430-5.000.

Ohtsuka, Katsuyuki: *See*—
Miyazaki, Hitoshi; Ohtsuka, Katsuyuki; and Miyata, Kazutoshi, 4,565,670, Cl. 422-186.040.

Ohya, Yoshio; Sano, Junichi; and Tamaki, Koichi, to Toshiba Heating Appliances Co., Ltd. Apparatus for use in preparing infusions. 4,565,121, Cl. 99-281.000.

Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, to Nikka Chemical Industry Co.; and Chiyoda Chem. Engineering & Construction Co. Ltd. Condensation product and use thereof as dispersant for pitch in water slurry. 4,565,546, Cl. 44-51.000.

Oilgear Japan Company, The: *See*—
Kunogi, Mahito, 4,565,219, Cl. 137-625.650.

Oimura, Katsuhiko: *See*—
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.

Oisel, Andre ; Boulenouar, Abdelhamid; and Le Gleau, Denise, to Cii Honeywell Bull (Societe Anonyme). Coding, detecting or correcting transmission error system. 4,566,105, Cl. 371-37.000.

Okabe, Kumiko, administratrix: *See*—
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.

Okabe, Tadao, deceased: *See*—
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.

Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, to Olympus Optical Co., Ltd. Electrophotographic copying process. 4,565,436, Cl. 355-3.00R.

Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased (by Okabe, Kumiko, administratrix), to Hitachi, Ltd. Gas discharge display apparatus. 4,566,006, Cl. 340-771.000.

Okamura, Shozo: *See*—
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, to Sumitomo Metal Industries, Ltd. Coal gasification apparatus. 4,565,551, Cl. 48-92.000.

Okaya, Takuji: *See*—
Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, 4,565,854, Cl. 526-214.000.

OKI Electric Industry Co.: *See*—
Tanagawa, Kouji, 4,566,111, Cl. 377-28.000.

Okui, Toshiaki: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Okuma, Osamu: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Okuno, Yasuo: *See*—
Nishizawa, Jun-ichi; and Okuno, Yasuo, 4,565,156, Cl. 118-412.000.

Okuzumi, Aijiro: *See*—
Katsuyama, Iwao; and Okuzumi, Aijiro, 4,565,718, Cl. 427-420.000.

Olin Corporation: *See*—
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.
Doonan, David F., 4,565,014, Cl. 34-36.000.
Trotz, Samuel I.; and Fedynyshyn, Theodore H., 4,565,856, Cl. 526-265.000.

Olsen, Cathryn E.: *See*—
Webb, Jimmy L.; and Olsen, Cathryn E., 4,565,885, Cl. 556-410.000.

Olson, David R.: *See*—
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

Olson, Douglas B.; and Calcote, Hartwell F., to AeroChem Research Laboratories, Inc. Saturation current incipient soot detector. 4,565,969, Cl. 324-468.000.

Olsson, Lennart; and Heber, Gerald, to Frigoscandia Contracting AB. Storing installation for carrying a number of piled helically extending turns of an endless conveyor belt. 4,565,282, Cl. 198-778.000.

Olympus Optical Co., Ltd.: *See*—
Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, 4,565,436, Cl. 355-3.00R.
Ueda, Yasuhiro, 4,565,423, Cl. 350-171.000.
Yusa, Atsushi, 4,565,677, Cl. 423-219.000.

Omata, Nobuaki, to Nifco Inc. Oil type damper. 4,565,266, Cl. 188-322.500.

Omron Tateisi Electronics Co.: *See*—
Iida, Takayuki; and Miyake, Tamio, 4,565,456, Cl. 374-169.000.
Misumi, Haruo; Ogawa, Hiroshi; Nagao, Naotake; and Oimura, Katsuhiko, 4,565,924, Cl. 250-227.000.

OMV Aktiengesellschaft: *See*—
Klein, Walter; and Rhemann, Herbert, 4,565,212, Cl. 137-486.000.

Ono, Hitoshi: *See*—
Masui, Tamenori; Ono, Hitoshi; and Ariyoshi, Toshihiko, 4,565,236, Cl. 164-459.000.

Onoda Cement Co., Ltd.: *See*—
Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, 4,565,138, Cl. 110-346.000.

Onodera, Kaoru: *See*—
Kajiwara, Makoto; and Onodera, Kaoru, 4,565,774, Cl. 430-382.000.

Onuma, Tatsuro: *See*—
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.

Oogiri, Tetuo: *See*—
Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, 4,565,138, Cl. 110-346.000.

Op de Beek, Franciscus J.: *See*—
Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., 4,566,120, Cl. 381-117.000.

Oppama Kogyo Kabushiki Kaisha: *See*—
Iwata, Masao, 4,565,180, Cl. 123-602.000.

Optical Coating Laboratory, Inc.: *See*—
Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., 4,565,719, Cl. 428-34.000.

Optima Spanntechnik GmbH: *See*—
Stahl, Bernhard; and Bohm, Horst, 4,565,357, Cl. 269-32.000.

Optische Werke Rodenstock: *See*—
Dietrich, Anton, 4,565,429, Cl. 351-137.000.

Orain, Michel A., to Glaenzer Spicer. Tripod homokinetic joint having swivelling rollers. 4,565,540, Cl. 464-111.000.

Orc Manufacturing Co., Ltd.: *See*—
Yazaki, Yoshio, 4,565,443, Cl. 355-99.000.

Orlowski, Werner: *See*—
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.

Orr, Raymond T., Jr., to Baker Drilling Equipment Company. Method and apparatus for detecting entrained gases in fluids. 4,565,086, Cl. 73-23.000.

Oshiage, Katsunori; and Hosaka, Akio, to Nissan Motor Company, Limited. Method and system for controlling fuel to be supplied from fuel pump to engine. 4,565,173, Cl. 123-458.000.

Oshima, Toshiaki: *See*—
Usui, Minoru; and Oshima, Toshiaki, 4,565,461, Cl. 400-611.000.

Osterhoudt, Hans W.: *See*—
Faust, Marilyn A.; and Osterhoudt, Hans W., 4,565,751, Cl. 429-94.000.

Ostrow, Barnet: *See*—
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,609, Cl. 204-44.400.
Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,610, Cl. 204-44.400.

Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, to Pentel Kabushiki Kaisha. Aqueous ink cartridge with two part vent plug. 4,565,463, Cl. 401-217.000.

Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, to Kirin Beer Kabushiki Kaisha. Antibiotic, Spicamycin. 4,565,781, Cl. 435-88.000.

Otsuka, Shigeharu; Mizuno, Yuji; Hasegawa, Tomoharu; and Kobukuro, Masahisa, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic contactor. 4,565,986, Cl. 335-131.000.

Otsuka, Shigeharu; and Mizuno, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic contactor. 4,565,987, Cl. 335-131.000.

Ott, Gerhard: *See*—
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.

Ott, Helmut: *See*—
Ruchser, Erich; and Ott, Helmut, 4,565,209, Cl. 137-116.300.

Ottieri Enterprises: *See*—
Ottieri, Marco T., 4,565,017, Cl. 36-117.000.

Ottieri, Marco T., to Ottieri Enterprises. Ski boot. 4,565,017, Cl. 36-117.000.

Ottosson, Lars-Olof: *See*—
Nytomt, Jan G.; Ottosson, Lars-Olof; and Agren, Nils A., 4,565,179, Cl. 123-599.000.

Outboard Marine Corporation: *See*—
Bland, Gerald F., 4,565,534, Cl. 440-88.000.
Shebuski, Robert C., 4,565,227, Cl. 141-1.000.

Outokumpu Oy: *See*—
Hultholm, Stig-Erik; Lilja, Launo L.; Makitalo, Valto J.; and Nyman, Bror G., 4,565,660, Cl. 261-121.00R.
Koistinen, Pauli A. T., 4,565,285, Cl. 198-819.000.

Owens-Corning Fiberglas Corporation: *See*—
Perkins, Richard A., 4,565,559, Cl. 65-2.000.
Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, 4,565,676, Cl. 423-210.000.
Seng, Stephen, 4,565,562, Cl. 65-335.000.

Oy Nokia AB: *See*—
Kirjavainen, Kari J., 4,565,510, Cl. 425-113.000.

Oya, Anders, to Stiansen & Oya A/S. Plow frame for a front-mounted snowplow. 4,565,018, Cl. 37-232.000.

Oya, Koichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Facsimile system. 4,566,039, Cl. 358-280.000.

Oya, Shin-ichi: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Ozawa, Norio: *See*—
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, 4,565,772, Cl. 430-320.000.

Ozawa, Takashi; and Takenouchi, Mutsuo. Original reading device. 4,566,040, Cl. 358-293.000.

Ozawa, Toshio: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.

Paar, Willibald; and Daimer, Wolfgang, to Vianova Kunstharz, A.G. Cathodically depositable electrodeposition paint binders based on epoxy resin-amino adducts reacted with phenol and formaldehyde modified with an unsaturated, substantially water-insoluble component. 4,565,838, Cl. 523-414.000.

Pachl, Jan K.: *See*—
Gammage, Neil D.; Pachl, Jan K.; and Casey, Liam M., 4,566,098, Cl. 370-89.000.

Pagnoni, Giorgio, to F.LLI Pagnoni S.p.A. Apparatus for loading and unloading a double opening press for manufacturing fibreboard. 4,565,481, Cl. 414-285.000.

Pak, Kyong H. Mathematical board game apparatus. 4,565,374, Cl. 273-272.000.

Palley, Maria. Portable head support for sleeping or resting in a sitting position. 4,565,408, Cl. 297-393.000.

Palosi, Endre: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.

Paolini, Jean, to Fabrique Ebel SA. Clasp for a bracelet or the like. 4,564,982, Cl. 24-71.00J.

Papahadjopoulos, Demetrios: *See*—
Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, 4,565,696, Cl. 424-88.000.

Papanicolaou, John P. S. Internal combustion engine. 4,565,165, Cl. 123-51.0BA.

Paranjpe, Suresh C.; Scott, Burton W.; and Kannapell, Henry N., to Mead Corporation, The. Drop counter printer control system. 4,566,014, Cl. 346-1.100.

Pardo Herrera, Jose , to Industrias Hidraulicas Pardo S.A. Retaining element for swinging weights. 4,564,964, Cl. 5-164.00R.

Parker-Hannifin Corporation: *See*—
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

Parks, Chris F., to Merck & Co., Inc. Aqueous compositions containing cyanuric acid. 4,565,640, Cl. 252-8.55R.

Parks, Richard: *See*—
Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.

Parman, Oscar D., to Dover Corporation. Flapper check valve assembly. 4,565,214, Cl. 137-512.150.

Parnham, Michael J.: *See*—
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.

Parrott, Stephen L.: *See*—
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,565,800, Cl. 502-200.000.

Pasternak, Stephen F.: *See*—
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,565,244, Cl. 165-181.000.

Paterick, Robert J.: *See*—
Scheidt, Wayne A.; and Paterick, Robert J., 4,565,260, Cl. 181-243.000.

Patton, Roy A. Method of making crimp connect terminals. 4,565,001, Cl. 29-866.000.

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Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Pawlicki, Ulrich; and Schuler, Wolfgang. Racket having a handle with different striking characteristics on opposite sides. 4,565,371, Cl. 273-73.00J.

Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., to North American Philips Consumer Electronics Corp. Deflection limiting means for CRT mask support means. 4,565,945, Cl. 313-404.000.

Pearce, Kenneth W., to Steetley Refractories Limited. Method of, and apparatus for, filtering a slurry. 4,565,637, Cl. 210-770.000.

Pebdani, Farrokh N.; and Shu, Winston R., to Mobil Oil Corporation. Heavy oil recovery process using cyclic carbon dioxide steam stimulation. 4,565,249, Cl. 166-303.000.

Pedersen, Peter: *See*—
Weerda, Hilko; Meuret, Gerhard; and Pedersen, Peter, 4,565,194, Cl. 128-204.230.

Peerless of America, Inc.: *See*—
O'Connor, Joseph M.; and Pasternak, Stephen F., 4,565,244, Cl. 165-181.000.

Peichl, Benno: *See*—
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Pellicciari, Roberto: *See*—
Castagnola, Virginio; Frigerio, E. Giuliano; and Pellicciari, Roberto, 4,565,810, Cl. 514-182.000.

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Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., 4,565,945, Cl. 313-404.000.

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Radice, Peter F., 4,565,615, Cl. 204-168.000.

Penny, Glenn S.; and Briscoe, James E., to Halliburton Company. Method of increasing hydrocarbon production by remedial well treatment. 4,565,639, Cl. 252-8.55B.

Penprase, John N.: *See*—
Beech, Jeffrey A.; and Penprase, John N., 4,564,976, Cl. 17-11.000.

Penta-Pak Inc.: *See*—
Berlebner, James A.; and Reifel, Charles J., 4,565,253, Cl. 177-1.000.

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Huelster, Richard L.; and Dyer, Thomas A., 4,565,483, Cl. 414-353.000.

Pentel Kabushiki Kaisha: *See*—
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Peredery, Valery P.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., 4,565,491, Cl. 415-160.000.

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Dussoubs, Daniele; Perichaud, Alain; and Savidan, Louis, 4,565,848, Cl. 525-331.500.

Perkin, Gregg S.: *See*—
Campbell, Thomas R.; Cunningham, William L.; and Perkin, Gregg S., 4,565,252, Cl. 175-269.000.

Perkins, James A.: *See*—
Matthews, James R.; Schattschneider, George K.; Black, Mervin R.; and Perkins, James A., 4,565,964, Cl. 324-51.000.

Perkins, Jeffrey T.: *See*—
Mullins, Phillip L.; Neal, James G.; and Perkins, Jeffrey T., 4,565,154, Cl. 118-410.000.

Perkins, Richard A., to Owens-Corning Fiberglas Corporation. Protection device for basalt drain bushings. 4,565,359, Cl. 65-2.000.

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Axelrod, Herbert R., 4,565,477, Cl. 412-5.000.

Perschka, Dale O.; and Rieben, Stuart L., to Westinghouse Electric Corp. Coil winding methods and apparatus. 4,564,998, Cl. 29-605.000.

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Nordmann, Rene ; and Petcher, Trevor J., 4,565,818, Cl. 514-290.000.

Peters, Richard W., to Industrial Products, Inc. Equalizer networks and methods of developing scaling coefficients therefor. 4,566,119, Cl. 381-103.000.

Petersen, Vagn: *See*—
Jekat, Herbert; Junghaus, Rainer; Geng, Walter; and Petersen, Vagn, 4,565,453, Cl. 366-279.000.

Peterson, Francis C., to Illinois Tool Works Inc. Apparatus for securement of clinch nut to carrier material. 4,564,986, Cl. 29-33.00K.

Peterson Manufacturing Company: *See*—
Templeman, Arthur R., 4,565,345, Cl. 248-481.000.

Peterson, Walter O. Power transmission apparatus. 4,565,105, Cl. 74-119.000.

Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., to Trico Products Corporation. Wiper equipment. 4,564,971, Cl. 15-250.350.

Petit, Jean C. Process and electronic device for the control and regulation of the supply current in an electric motor fed from a fixed voltage direct current source. 4,565,951, Cl. 318-317.000.

Petrzilka, Martin; and Schadt, Martin, to Hoffmann-La Roche Inc. Liquid crystals. 4,565,425, Cl. 350-350.00R.

Pfeiffer, John W.: *See*—
Fischer, John; Heaton, Kenneth A.; and Pfeiffer, John W., 4,565,305, Cl. 222-368.000.

Pfeiffer, Peter; and Maerte, Leo, to Ing. Erich Pfeiffer GmbH & Co. KG. Actuatable dosing mechanism. 4,565,302, Cl. 222-38.000.

Pfizer Inc.: *See*—
Ives, Jeffrey L.; and Sciavolino, Frank C., 4,565,653, Cl. 260-112.50R.
Schnur, Rodney C., 4,565,820, Cl. 514-314.000.

Philip A. Hunt Chemical Corporation: *See*—
Kim, Hongzoon; and Salamy, Thomas E., 4,565,776, Cl. 430-467.000.

Philips Petroleum Company: *See*—
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,565,800, Cl. 502-200.000.

Phillipps, Patrick G., to Lifeline Systems, Inc. Telephone care system with supplementary alarm message. 4,565,902, Cl. 179-5.00R.

Phillips Petroleum Company: *See*—
McLeod, Malcolm L., 4,565,003, Cl. 29-281.100.
Montgomery, Dean P.; Gall, James W.; and Davis, Ed D., 4,565,620, Cl. 208-80.000.
Short, James N.; and McDaniel, Max P., 4,565,795, Cl. 502-110.000.
Phillips, Roger W.; Higgins, Patrick K.; and Berning, Peter H., to Optical Coating Laboratory, Inc. Energy control window film systems and methods for manufacturing the same. 4,565,719, Cl. 428-34.000.
Piazzola, Gaetano. Electric thermal unit for controllably heating cylinders having two coaxial interspaces for circulating ventilation air therethrough. 4,565,921, Cl. 219-550.000.
Pichler, Josef; Puchegger, Karl; and Starek, Bruno, to Mannesmann Tally GmbH. Mechanism for reciprocating a line printer shuttle. 4,565,127, Cl. 101-93.040.
Piereder, Ludwig. Meat packaging apparatus. 4,565,054, Cl. 53-517.000.
Pinkhasov, Eduard, to Wedtech Corp. Method of and apparatus for the coating of quartz crucibles with protective layers. 4,565,711, Cl. 427-50.000.
Pirkle, James C., Jr.: *See*—
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., Jr., 4,565,831, Cl. 518-700.000.
Pirmantgen, Robert E.; Adamski, John S.; and Devens, Mark F., to Northwestern University. Knee orthosis with swivel-action supracondular cuff. 4,565,190, Cl. 128-80.00C.
Pitney Bowes Inc.: *See*—
Check, Frank T., Jr., 4,566,106, Cl. 371-67.000.
Pittet, Alan O.; Muralidhara, Ranya; Miller, Kevin P.; Luccarelli, Domenick, Jr.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Flavoring with dialkylthioalkenes, dialkylthioalkylcycloalkenes and monoalkylthioalkenylcycloalkenes. 4,565,707, Cl. 426-535.000.
Pitz, Hans P.: *See*—
Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, 4,565,203, Cl. 131-283.000.
Plastimecanique, S.A.: *See*—
Dronet, Jean-Marc, 4,565,304, Cl. 222-108.000.
Plath, Peter: *See*—
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,565,565, Cl. 71-92.000.
Poferl, Gunter: *See*—
Jilek, Walter; and Poferl, Gunter, 4,565,355, Cl. 266-224.000.
Polacek, Richard: *See*—
Merk, Edward; Delaney, George; Wasynczuk, Leon; Parks, Richard; and Polacek, Richard, 4,565,480, Cl. 414-225.000.
Polaroid Corporation: *See*—
MacKenzie, Hugh R., 4,566,015, Cl. 346-107.00R.
Polonsky, Vladimir M.: *See*—
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Roznhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.
Polster, Peter: *See*—
Descamps, Marcel; and Polster, Peter, 4,565,828, Cl. 514-469.000.
Polster, Walter: *See*—
Brunn, Klaus; and Polster, Walter, 4,566,115, Cl. 378-097.000.
Ponce, Felix C. Strike template for a portable router. 4,565,228, Cl. 144-27.000.
Porter, Wade T. Sighting apparatus. 4,565,009, Cl. 33-233.000.
Porzio, Linda A.: *See*—
Arciszewski, Henry; Porzio, Linda A.; and Chiang, Bin Y., 4,565,089, Cl. 78-82.000.
Poth, Ulrich; Bartol, Fritz; and Machholz, Adolf, to BASF Farben & Fasern AG. Coating composition, in particular for producing a transparent topcoat of a multilayer coating, a process for producing coatings, and an article coated with a multilayer coating. 4,565,730, Cl. 428-204.000.
Potter, James C., to Lucas Industries public limited company. Fuel injection unit. 4,565,319, Cl. 239-88.000.
Poulin, Charlemagne. Multi-purpose compound hand tool. 4,565,398, Cl. 294-52.000.
Power-Matic, Inc.: *See*—
Cooper, Edward, 4,565,958, Cl. 323-248.000.
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., to Solid State Devices, Inc. Fault detecting circuit and method for a vehicle detector system. 4,566,008, Cl. 340-941.000.
PPG Industries, Inc.: *See*—
Gagne, Robert, 4,565,561, Cl. 65-135.000.
Kenworthy, James S.; and Kozinski, Thomas G., 4,565,616, Cl. 204-192.00C.
Krumwiede, John F.; and Tsai, Yih-Wan, 4,565,560, Cl. 65-134.000.
Precision Fukuhara Works, Ltd.: *See*—
Tsuchiya, Koji, 4,565,076, Cl. 66-151.000.
Precision Tube Bending: *See*—
Newman, Ira R.; Minshull, Kenneth N.; and McGilp, Kenneth J., 4,565,380, Cl. 277-178.000.
Preis, Alan D.: *See*—
Spamer, William S.; and Preis, Alan D., 4,565,725, Cl. 428-167.000.
Prescolite, Inc.: *See*—
Druffel, James B., 4,566,057, Cl. 362-364.000.
President and Fellows of Harvard College, The: *See*—
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,565,785, Cl. 435-317.000.
Prevorsek, Dusan C.; and Akkapeddi, Murali K., to Allied Corporation. Thermoplastic composition containing nematic oligomer. 4,565,850, Cl. 525-425.000.
Prime Computer, Inc.: *See*—
Goldman, Craig E.; and Voorhies, Douglas A., 4,566,000, Cl. 340-709.000.
King, Allen; Collins, Peter; and Goldman, Jay, 4,565,999, Cl. 340-706.000.
Pritchard Sales Company, Inc.: *See*—
Beech, Jeffrey A.; and Penprase, John N., 4,564,976, Cl. 17-11.000.
Procter & Gamble Company, The: *See*—
Correa, Paul E.; and Riley, Dennis P., 4,565,891, Cl. 564-298.000.
Llenado, Ramon A., 4,565,647, Cl. 252-354.000.
Proios, Steve: *See*—
DeGraw, Kenneth J.; Wilcockson, Brian; Nickerson, Earl W.; Bocchini, William R.; Bogossian, Armen; and Proios, Steve, 4,565,636, Cl. 210-748.000.
Prop, Gerrit: *See*—
Lautenschlager, Hans-Heiner; Borbe, Harald; Prop, Gerrit; Wirtz-Peitz, Ferdinand; Doppelfeld, Ille-Stephanie; and Parnham, Michael J., 4,565,659, Cl. 260-925.000.
Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Method for treating exhaust gases. 4,565,676, Cl. 423-210.000.
Puchegger, Karl: *See*—
Pichler, Josef; Puchegger, Karl; and Starek, Bruno, 4,565,127, Cl. 101-93.040.
Pugliese, Lawrence S.; and Eyster, Jerry L. Syringe disposal device. 4,565,311, Cl. 225-94.000.
Purdy, John R., to Imperial Chemical Industries, PLC. Multiple-layer polyolefin films. 4,565,738, Cl. 428-349.000.
Qaderi, Saiyed B. A., to Ford Motor Company. Crosslinkable composition comprising aminoepoxy resin-II. 4,565,852, Cl. 525-528.000.
Qualitone Hearing Aids, Division of XCor Corp.: *See*—
Harada, Mas, 4,565,904, Cl. 179-107.00E.
R&H Technology, Inc.: *See*—
Heine, Otto R.; and Riede, Peter M., 4,565,210, Cl. 137-219.000.
Radice, Peter F., to Pennwalt Corporation. Glow discharge stabilization of piezoelectric polymer film. 4,565,615, Cl. 204-168.000.
Ragle, Herbert U., to Burroughs Corporation. Radiation generation of "signature" for reeled-web. 4,565,927, Cl. 250-560.000.
Rakoczy, Istvan: *See*—
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , 4,565,827, Cl. 514-469.000.
Ramasco, Carlo, to Sant' Andrea Novara Officine Meccaniche e Fonderie. Combing machine for textile fibres. 4,564,979, Cl. 19-215.000.
Rambach, Daniel: *See*—
Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, 4,565,492, Cl. 415-175.000.
Rambo, William R., to Commtech International. Switched diversity method and apparatus for FM receivers. 4,566,133, Cl. 455-277.000.
Ramisch, Heinrich, to Krauss-Maffei Aktiengesellschaft. Apparatus for producing articles from two or more flowable synthetic resin reactants. 4,565,511, Cl. 425-146.000.
Ramuz, Henri: *See*—
Imfeld, Marquard; Ramuz, Henri; Vogt, Peter; and Muller, Jean-Claude, 4,565,869, Cl. 544-323.000.
Ranaudo, Anthony R.: *See*—
Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., 4,565,029, Cl. 49-25.000.
Rankin, Georgia A. Simulated animal toilet tissue holder. 4,565,335, Cl. 242-55.200.
Rao, Kameswara K.: *See*—
Fang, Sheng; and Rao, Kameswara K., 4,566,080, Cl. 365-185.000.
Rao, Nageswara C.: *See*—
Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, 4,565,789, Cl. 436-504.000.
Rao, Yalamanchili K.; and Soleiman, Mohamad K., to Washington Research Foundation. Alumina chlorination. 4,565,674, Cl. 423-137.000.
Raskin, Iosif A.: *See*—
Ivanov, Sergei K.; Dudkin, Viktor E.; Raskin, Iosif A.; and Peredery, Valery P., 4,565,491, Cl. 415-160.000.
Rasshofer, Werner; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Single-stage process for the production of polyamines and polyamines produced by such process. 4,565,645, Cl. 252-182.000.
Rauschenberger, Joerg. Hinge. 4,565,404, Cl. 297-19.000.
Raychem Corporation: *See*—
Harrison, John D., 4,565,589, Cl. 148-402.000.
Raymond, Glendon A., to Carrier Corporation. Apparatus and method for defrosting a heat exchanger in a refrigeration circuit. 4,565,070, Cl. 62-81.000.
Raytheon Company: *See*—
Collins. John D., 4,566,010, Cl. 343-17.2PC.
RCA Corporation: *See*—
Haferl, Peter E., 4,565,949, Cl. 315-371.000.
Harger, Mark A.; Amaral, Joseph E.; and Blatter, Harold, 4,566,034, Cl. 358-194.100.
Jastrzebski, Lubomir L.; and Ipri, Alfred C., 4,566,025, Cl. 357-42.000.
Johnson, Cydney A., 4,566,029, Cl. 358-50.000.
Lewis, Henry G., Jr.; and Bolger, Thomas V., 4,566,028, Cl. 358-21.00R.

Reagents of the University of Michigan, The: *See*—
Khazaeli, Mohammad B.; Beierwaltes, William H.; and England, Barry G., 4,565,687, Cl. 424-1.100.
Rebula, Edward; and Kurasz, Alexander J., to Babcock & Wilcox Company, The. Nozzle structure for sootblower. 4,565,324, Cl. 239-290.000.
Rede, Hector; Winfield, Armand G.; and Winfield, Barbara L., to Rede, Hector. Apparatus for preservation of a leather glove. 4,565,287, Cl. 206-213.000.
Reel, John M. Film copying apparatus. 4,565,985, Cl. 355-113.000.
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Rivere, Jean-Pierre, 4,565,168, Cl. 123-90.340.
Reichert, Klaus: *See*—
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.
Reichmann, Wolfgang: *See*—
Kopp, Richard; and Reichmann, Wolfgang, 4,565,648, Cl. 252-397.000.
Reidenouer, Linda L. Television viewing time regulator. 4,566,033, Cl. 358-115.000.
Reifel, Charles J.: *See*—
Berlebner, James A.; and Reifel, Charles J., 4,565,253, Cl. 177-1.000.
Reimers, Reimer, to Flottmann-Werke GmbH. Reciprocating compressor for gaseous media. 4,565,507, Cl. 417-564.000.
Reinecke, Paul: *See*—
Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, 4,565,829, Cl. 514-514.000.
Reiner, Per L.; and Aberg, Sven U. T., to Molnlycke Aktiebolag. Method and device for reducing disturbances during paper web formation. 4,565,603, Cl. 162-123.000.
Reinke, Theodore S., to Sea Savory, Inc. Crab body supporting means for a vibratory type machine for removing edible meat. 4,564,978, Cl. 17-71.000.
Reliance Electric Company: *See*—
Kammiller, Neil A., 4,566,052, Cl. 361-18.000.
Remond, Georges: *See*—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,565,819, Cl. 514-307.000.
Rengersen, Jacob: *See*—
Van Laar, Jacobus; Felthuis, Jacob; Butter, Jahannes A.M.; Rengersen, Jacob; and Sannes, Albert, 4,565,525, Cl. 432-248.000.
Research Development Corporation: *See*—
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.
Research Foundation of State University of New York, The: *See*—
Chu, Benjamin, 4,565,446, Cl. 356-246.000.
Resnick, Paul R.: *See*—
Anderson, Burton C.; England, David C.; and Resnick, Paul R., 4,565,855, Cl. 526-247.000.
Revici, Emanuel, to Wirth Maschinen-und Bohrgerate-Fabrik GmbH. Method for treating the effects of alcohol. 4,565,689, Cl. 424-10.000.
Revici, Emanuel, to Avram, Elena. Method for treating drug addiction. 4,565,690, Cl. 424-10.000.
Reynolds, Scott D., to Xerox Corporation. Low mass heat and pressure fuser. 4,565,439, Cl. 355-3.0FU.
Rheinmetall GmbH.: *See*—
Theis, Ulrich, 4,565,132, Cl. 102-517.000.
Rhemann, Herbert: *See*—
Klein, Walter; and Rhemann, Herbert, 4,565,212, Cl. 137-486.000.
Rhone-Poulenc Recherches: *See*—
Cassat, Robert, 4,565,606, Cl. 204-20.000.
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Costantini, Michel; Igersheim, Francoise; and Krumenacker, Leon, 4,565,895, Cl. 568-362.000.
Rhone-Poulenc Specialites Chimiques: *See*—
Le Du, Yannick; and Meiller, Francois, 4,565,635, Cl. 210-727.000.
Rhythm Watch Co., Ltd.: *See*—
Kubota, Susumu, 4,565,955, Cl. 318-696.000.
Rible, Richard A. Lever wrench for snap fit valves. 4,564,990, Cl. 29-267.000.
Ricard, Jean, to Criceram. Processes for the continuous preparation of single crystals. 4,565,600, Cl. 156-608.000.
Ricci, John D. Towel support. 4,565,144, Cl. 112-437.000.
Rice, Ivan G. Integrated gas/steam nozzle. 4,565,490, Cl. 415-114.000.
Richard, Michael A.: *See*—
Wright, Franklin J.; Richard, Michael A.; and Pirkle, James C., Jr., 4,565,831, Cl. 518-700.000.
Richards, Gaylord W., to AT&T Bell Laboratories. Rearrangeable multiconnection switching networks. 4,566,007, Cl. 340-825.800.
Richter, Reinhard H.: *See*—
Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., 4,565,835, Cl. 521-155.000.
Ricoh Company, Ltd.: *See*—
Kikuno, Mitsutoyo, 4,565,950, Cl. 318-85.000.
Takata, Akira; and Matsuoka, Shigeki, 4,565,960, Cl. 323-317.000.
Tsutsui, Kyoji, 4,565,759, Cl. 430-66.000.
Rider, Billie F., to Rockwell International Corporation. Precision harmonic rejecting demodulator with digital phase alignment. 4,565,970, Cl. 329-50.000.
Ridgway, Peter C.; and Geen, John A., to British Aerospace PLC. Oscillatory drive mechanisms for a ring laser gyro. 4,565,941, Cl. 310-328.000.
Rieben, Stuart L.: *See*—
Perschka, Dale O.; and Rieben, Stuart L., 4,564,998, Cl. 29-605.000.
Riede, Peter M.: *See*—
Heine, Otto R.; and Riede, Peter M., 4,565,210, Cl. 137-219.000.
Rieter Machine Works Limited: *See*—
Mondini, Giancarlo; and Schmid, Rene, 4,565,337, Cl. 242-66.000.
Stalder, Herbert; and Briner, Emil, 4,565,063, Cl. 57-328.000.
Riker Laboratories, Inc.: *See*—
Leir, Charles M., 4,565,872, Cl. 546-176.000.
Wade, James J., 4,565,864, Cl. 544-58.200.
Riley, Dennis P.: *See*—
Correa, Paul E.; and Riley, Dennis P., 4,565,891, Cl. 564-298.000.
Riley, Douglas H., to AT&T Bell Laboratories. Telephone interexchange carrier selection. 4,565,903, Cl. 179-18.00B.
Rimbert, Jean F., to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Casting process and installation for a non-ferrous metal in the molten state. 4,565,234, Cl. 164-66.100.
Ritchie, David E.; and Seay, Edward E. Seismic shut-off valve. 4,565,208, Cl. 137-38.000.
Rivere, Jean-Pierre, to Regie Nationale des Usines Renault. Valve control device, particularly for valves of internal combustion engines. 4,565,168, Cl. 123-90.340.
Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute For Biological Studies, The. GnRH Antagonists VI. 4,565,804, Cl. 514-15.000.
Robert Bosch GmbH: *See*—
Buck, Manfred; Schmid, Wolfgang; and Wanner, Karl, 4,565,313, Cl. 227-131.000.
Damson, Eckart; Klenk, Martin; Moser, Winfried; and Moller, Heinz, 4,565,087, Cl. 73-35.000.
Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, 4,565,170, Cl. 123-359.000.
Lade, Gunther, 4,565,048, Cl. 53-201.000.
Zimmermann, Peter; and Teape, John W., 4,565,956, Cl. 318-721.000.
Roberts, Jon A.: *See*—
Lee, Ed C.; and Roberts, Jon A., 4,566,026, Cl. 357-71.000.
Roberts, Peter, to Thrush Incorporated. Method for manufacturing a tail-pipe replacement kit. 4,564,987, Cl. 29-157.00R.
Roberts, William M.: *See*—
Tapp, William T.; and Roberts, William M., 4,565,247, Cl. 166-123.000.
Robertson, Charles W., Jr: *See*—
Abbott, Scot D.; and Robertson, Charles W., Jr, 4,565,448, Cl. 356-336.000.
Rockwell International Corporation: *See*—
Anderson, Eric G., 4,565,922, Cl. 235-492.000.
Brian, Michael, 4,565,993, Cl. 340-347.0AD.
Rider, Billie F., 4,565,970, Cl. 329-50.000.
Walter, Robert J.; and Lin, Jerhong, 4,565,744, Cl. 428-570.000.
Rockwood, Richard D.; and Ruskin, Bernard J., to Chapman Manufacturing Company, Inc. Extensible swivel. 4,565,395, Cl. 285-282.000.
Rodden, John A.: *See*—
Burdick, Bruce E.; Rodden, John A.; Brown, Robert G.; and Barnard, Rodney N., 4,565,114, Cl. 89-35.010.
Roettgen, Leslie A.; and Israel, Kenneth W., to Cummins Engine Company, Inc. Unitized cross tie aftercooler assembly. 4,565,177, Cl. 123-563.000.
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, to W. Schlafhorst & Co. Make-ready unit for making a thread end ready. 4,565,058, Cl. 57-22.000.
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Dichloroacetamides, herbicides containing acetanilides as herbicidal active ingredients and the dichloroacetamides as antagonists, and the use of these herbicides in controlling undesired plant growth. 4,565,565, Cl. 71-92.000.
Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See*—
Simeth, Claus; and Despot, Janko, 4,565,129, Cl. 101-240.000.
Rolfe, Norman F., to Allied Corporation. Logarithmic converter circuit arrangements. 4,565,935, Cl. 307-491.000.
Rosemount Inc.: *See*—
Knecht, Thomas A., 4,565,096, Cl. 73-718.000.
Rosensweig, Ronald E., to Exxon Research and Engineering Co. Composite zeolitic magnetic material. 4,565,793, Cl. 502-74.000.
Rouaud, Yvon: *See*—
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Roussel Uclaf: *See*—
Jouquey, Alain; and Hunt, Peter F., 4,565,876, Cl. 548-426.000.
Nedelec, Lucien; Torelli, Vesperto; and Hardy, Michel, 4,565,656, Cl. 260-397.470.
Tessier, Jean; Teche, Andre ; and Girault, Pierre, 4,565,822, Cl. 514-351.000.
Rozek, Roy J., to Kohler Co. Handle assembly. 4,565,350, Cl. 251-292.000.
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Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.
Ruchser, Erich; and Ott, Helmut, to Herion-Werke KG. Pressure regulating valve with feedback control. 4,565,209, Cl. 137-116.300.

Rudolph, Volker: *See*—
Goldrian, Gottfried; and Rudolph, Volker, 4,566,019, Cl. 346-163.000.
Rudy, William J.; and Smith, Dennis E., to AMP Incorporated. Latching means and locking means for retaining terminals in a connector. 4,565,416, Cl. 339-59.00M.
Ruhl, Robert C., to Kennecott Corporation. Electrohydraulic drive for process line winders, unwinders and other equipment. 4,565,334, Cl. 242-54.00R.
Runkel, Walter; Lenk, Erich; and Bauer, Karl, to Barmag Barmer Maschinenfabrik AG. Sealed yarn heating chamber. 4,565,524, Cl. 432-59.000.
Runkle, Charles J., to Monsanto Company. Fluid distribution system for separation modules. 4,565,630, Cl. 210-321.100.
Runzi, Kurt. Separable single-sheet feeding apparatus for office machines. 4,565,360, Cl. 271-4.000.
Ruskin, Bernard J.: *See*—
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Sabre Engines Limited: *See*—
Kaye, George C., 4,565,175, Cl. 123-542.000.
Saenger, Dietrich: *See*—
Lynch, John; Leyrer, Reinhold J.; and Saenger, Dietrich, 4,565,771, Cl. 430-307.000.
Sage, Warnie L.; and Stringfellow, Thomas E., to Stearns Catalytic World Corp. Method and apparatus for obtaining energy. 4,565,139, Cl. 110-347.000.
Sahasrabudhe, Arun P.; and DiSilvestro, Robert J., to Westinghouse Electric Corp. Speed control apparatus and method for rapid transit vehicles. 4,566,067, Cl. 364-426.000.
Saibe, Seiichi: *See*—
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Saito, Chikara: *See*—
Katayama, Hiroyuki; Ishikawa, Hidetake; Kuwabara, Masatoshi; Saito, Chikara; Inoue, Tuneyuki; and Fujita, Masaki, 4,565,574, Cl. 75-130.500.
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Saito, Kaizaburo: *See*—
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Saito, Koji, to Kohshoh Limited. Device for fastening a belt or the like. 4,564,983, Cl. 24-170.000.
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Saito, Tadao: *See*—
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Saito, Yukihiro; Ito, Yoshimasa; and Asakawa, Shiro, to Matsushita Electric Industrial Company, Limited. Selective gas-permeable films. 4,565,846, Cl. 525-101.000.
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Sakagami, Yukio: *See*—
Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, 4,565,039, Cl. 52-167.000.
Sakai, Katsumi; and Toyoshima, Isao, to Murata Manufacturing Co., Ltd. Energy trapped piezoelectric resonator liquid sensor. 4,565,942, Cl. 310-338.000.
Sakai, Kunio: *See*—
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Sakamoto, Kazuhiko, to Sugatsune Industrial Co., Ltd. Rail arrangement for flush sliding door panels. 4,565,031, Cl. 49-130.000.
Sakamoto, Nobuo: *See*—
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Sakamoto, Shigemi; and Saito, Satoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog to digital converter. 4,565,992, Cl. 340-347.0AD.
Sakamoto, Shinichi: *See*—
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Sako, Junichi; Yagi, Toshiharu; Higashihata, Yoshihide; and Fukuyama, Kouji, to Daikin Kogyo Co., Ltd. Process for preparing polymeric piezoelectric material. 4,565,943, Cl. 310-357.000.
Sakurai, Yoshimi: *See*—
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Salgo, Vilmos; Hanzely, Jozsef; Baross nee Sipocz, Anna; and Geri, Istvan, to Budacolor Festekgyar. Printing ink of new type and process for preparing same. 4,565,576, Cl. 106-23.000.
Salk Institute For Biological Studies, The: *See*—
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,565,804, Cl. 514-15.000.
Samuel, Robert A.; Selke, Gary J.; and Morris, Russell W., to Advanced Technology Laboratories, Inc. CRT Monitor with built-in camera. 4,566,035, Cl. 358-244.000.
Samyn, Johan. Process and apparatus for identifying articles of sheet material by means of microwaves. 4,566,121, Cl. 382-7.000.
Samyn, Johan. Process and apparatus for identifying articles of sheet material by means of microwaves. 4,566,122, Cl. 382-7.000.
Sand, Douglas S.: *See*—
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Sanden Corporation: *See*—
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Sanders, Gerald W. Tension control for baling machine. 4,565,123, Cl. 100-43.000.
Sandoz Ltd.: *See*—
Neumann, Peter, 4,565,816, Cl. 514-253.000.
Nordmann, Rene ; and Petcher, Trevor J., 4,565,818, Cl. 514-290.000.
Sankin Industry Co., Ltd.: *See*—
Kawata, Terushige; Kobayashi, Takashi; and Nakagawa, Katsuyuki, 4,565,526, Cl. 433-8.000.
Sannes, Albert: *See*—
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Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,565,814, Cl. 514-228.000.
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Sanuga, Fumiwo, to Billcon Co., Ltd. Document handling equipment with counter controllable cover. 4,566,109, Cl. 377-2.000.
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Sanyo Electric Co., Ltd.: *See*—
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Matsuo, Setsuo; Nakanome, Noboru; and Nishishita, Koji, 4,565,002, Cl. 29-623.400.
Sanzi, James L.: *See*—
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Sarrazin, Michel, to SEB S.A. Weighing device with strain gages. 4,565,255, Cl. 177-211.000.
Sarson, Gary A.; and McKenzie, Michael P., to Standard Telephones and Cables, Public Limited Company. Telephone exchange conference circuit. 4,566,096, Cl. 370-62.000.
Sarver, Emory W.: *See*—
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.
Sasaki, Kenichi: *See*—
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Sasaki, Kenji: *See*—
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Sasano, Akira: *See*—
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Sathe, Sharad S., to Mallinckrodt, Inc. Process for the preparation of N-acetyl-P-aminophenol. 4,565,890, Cl. 564-216.000.
Sato, Kiyosumi; and Shimizu, Kazuyuki, to Fujitsu Limited. Method for recovering from error in a microprogram-controlled unit. 4,566,103, Cl. 371-12.000.
Sato, Kiyosumi: *See*—
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Sato, Megumi. Basket for catching fish and the like. 4,565,027, Cl. 43-102.000.
Sato, Noritada: *See*—
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Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, to Kuraray Co., Ltd. Polymer having thiol end group. 4,565,854, Cl. 526-214.000.
Satoh, Gunkichi: *See*—
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Satoh, Isao: *See*—
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Satoh, Masayuki; and Wada, Yoshisada, to Toyota Jidosha Kabushiki Kaisha. Internal combustion engine cylinder-head cover. 4,566,164, Cl. 123-41.860.

Satoh, Toshihiko: *See*—
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Sauerwald, Walter: *See*—
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Schank, Richard L., to Xerox Corporation. Protective overcoatings for photoresponsive imaging members. 4,565,760, Cl. 430-66.000.
Scharf, Ruth. Baby bottle security garment. 4,564,957, Cl. 2-75.000.
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Scheidt, Wayne A.; and Paterick, Robert J., to Maremont Corporation. Mechanical lock joint for vehicular exhaust system muffler and the like. 4,565,260, Cl. 181-243.000.
Scheier, Donald J.; and Hathorn, Jack L., to Simon-Johnson, Inc. Poultry vent removal machine. 4,564,977, Cl. 17-11.000.
Schering Aktiengesellschaft: *See*—
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Schieler, Karl: *See*—
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Schilling, Albert; and Schob, Wolfgang, to Carl-Zeiss-Stiftung. Device for the rapid adjustment of microscope stages. 4,565,427, Cl. 350-530.000.
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Schlais, Rudolph A., Jr.: *See*—
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Schmid, Norbert; and Schonwald, Siegfried, to Siemens Aktiengesellschaft. Rotary gas compressor. 4,565,498, Cl. 417-68.000.
Schmid, Rene: *See*—
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Schmid, Wolfgang: *See*—
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Schmidtberger, Rudolf, to Behringwerke Aktiengesellschaft. Process for removing lipoproteins using derivatized polyhydroxymethylene. 4,565,652, Cl. 260-112.00B.
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Schmitt, Hans-Georg; Wedemeyer, Karlfried; Brandes, Wilhelm; and Reinecke, Paul, to Bayer Aktiengesellschaft. Fungicidal 2-thiocyanato-benzamides. 4,565,829, Cl. 514-514.000.
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Schneider, Volker; Stoll, Wolfgang; and Druckenbrodt, Wolf-Gunther, to Alkem GmbH. Method for the manufacture of PuO_2-containing crystals. 4,565,672, Cl. 423-15.000.
Schneider, Wilfried, to Klockner-Humboldt-Deutz AG. Turbocharger. 4,565,068, Cl. 60-602.000.
Schnur, Rodney C., to Pfizer Inc. Hypoglycemic 5-pyrrolyl, indolyl and quinolyl substituted oxazolidine-2,4-diones and their use. 4,565,820, Cl. 514-314.000.
Schob, Wolfgang: *See*—
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Schoberle, Robert; and Schaffer, Walter, to Solvay & Cie. Process for removing a layer of thick mercury from the bottom of mercury-cathode electrolysis cells and a process for the electrolysis of an aqueous solution of an alkali metal halide in a mercury-cathode cell. 4,565,613, Cl. 204-99.000.
Schoenthal, Galeon W.; and Slaugh, Lynn H., to Shell Oil Company. Methanol synthesis catalyst. 4,565,803, Cl. 502-303.000.
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Nobel, Fred I.; Ostrow, Barnet; and Schram, David N., 4,565,610, Cl. 204-44.400.
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Schuler, Wolfgang: *See*—
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Schulte, Gerhard, to Blomberger Holzindustrie, B. Hausmann GmbH & Co, KG. Method for producing a veneer web. 4,565,597, Cl. 156-250.000.
Schultz, Robert H., to Adolph Coors Company. Device and method for uniformly curing uv photoreactive overvarnish layers using magnetic conveyors. 4,565,713, Cl. 427-54.100.
Schuocker, Dieter; and Klement, Ekkehard, to Siemens Aktiengesellschaft. Device for the execution of a scalar multiplication of vectors. 4,566,077, Cl. 364-845.000.
Schurter, Rolf: *See*—
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Schwab, Alfred: *See*—
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Sciavolino, Frank C.: *See*—
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Sea Savory, Inc.: *See*—
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Seam Team, Inc.: *See*—
Gray, James B.; and Joyce, Robert A., 4,565,728, Cl. 428-200.000.
Seaman, Peter H.: *See*—
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Sedgewick, Richard D. Apparatus for precision placement and parameter measurement. 4,565,094, Cl. 73-432.00R.
Seguchi, Kazukuni: *See*—
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Seiber, Wolfram, to ITT Industries, Inc. Hydraulic brake system with slip control. 4,565,411, Cl. 303-110.000.
Seki, Masahiko; Nakatani, Hiroshi; Minami, Shozo; and Kogumasaka, Katsuya, to Nippon Steel Corp. Raw materials charging device for preheating furnace. 4,565,479, Cl. 414-199.000.
Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, to Nissan Motor Co., Ltd. Cooling system of an internal combustion engine. 4,565,162, Cl. 123-41.080.
Seki, Yasukazu; and Sato, Noritada, to Fuji Electric Corporate Research and Development Ltd. Method for diffusion of impurities. 4,565,588, Cl. 148-186.000.
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Complex system having the functions of optical character reader and facsimile. 4,566,127, Cl. 382-56.000.

Sekiya, Shinji, to Disco Abrasive Systems, Ltd. Grinding and/or cutting endless belt. 4,565,034, Cl. 51-401.000.
Seko, Yasutoshi; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Warning device for a vehicle. 4,565,997, Cl. 340-576.000.
Seleski, Richard: *See—*
Gallios, George C.; Whitehead, Derek; and Seleski, Richard, 4,566,059, Cl. 363-17.000.
Selke, Gary J.: *See—*
Samuel, Robert A.; Selke, Gary J.; and Morris, Russell W., 4,566,035, Cl. 358-244.000.
Sell, Otto. Counterbalance wheel for a wind machine. 4,565,502, Cl. 417-334.000.
Sello, Lilian H.: *See—*
Foley, Louise H.; Sello, Lilian H.; and Westley, John, 4,565,862, Cl. 536-16.800.
Seng, Stephen, to Owens-Corning Fiberglas Corporation. Two-stage heating media feeder for a glass batch preheating drum. 4,565,562, Cl. 65-335.000.
Seng, Stephen: *See—*
Propster, Mark A.; Kithany, Subhash; and Seng, Stephen, 4,565,676, Cl. 423-210.000.
Senmed, Inc.: *See—*
Becht, Carl T., 4,565,199, Cl. 128-325.000.
Sentrol Systems Ltd.: *See—*
Mactaggart, John W., 4,565,444, Cl. 356-73.000.
Seragnoli, Enzo; and Mattei, Riccardo, to G.D Societa' per Azioni. Method and apparatus for forming perforation in bar-shape articles. 4,565,202, Cl. 131-281.000.
Seragnoli, Enzo; and Dall'Osso, Gastone, to G.D. Societa per Azioni. Apparatus for transferring individual or batch formed products from a first to a second machine. 4,565,284, Cl. 198-792.000.
Setala, Kai M. E. Composition and method for rational treatment of cancer. 4,565,806, Cl. 514-54.000.
Seto, Junetsu: *See—*
Arakawa, Seiichi; Kondo, Hirofumi; and Seto, Junetsu, 4,565,779, Cl. 430-962.000.
Seufert, Ludwig E.: *See—*
Hosegood, Edward A.; and Seufert, Ludwig E., 4,565,717, Cl. 427-339.000.
Seymour, Robert J.; and Stegeman, George I., to GTE Laboratories Incorporated. Surface plasmon coupler. 4,565,422, Cl. 350-96.190.
Seymour, Robert S., to Commonwealth of Australia, The. Method and apparatus for controlling diameter in Czochralski crystal growth by measuring crystal weight and crystal-melt interface temperature. 4,565,598, Cl. 156-601.000.
Shaffer, Dale A.: *See—*
Kay, John W.; Shaffer, Dale A.; and Basquin, Maurice H., 4,565,021, Cl. 38-137.000.
Shannon, John M., to U.S. Philips Corporation. Hot-electron and hot-hole transistors having silicide contacts. 4,566,020, Cl. 357-15.000.
Shannon, Michael A., to Northern Telecom Limited. Method and apparatus for making a magnetically loaded insulated electrical conductor. 4,565,591, Cl. 156-51.000.
Shapiro, James A. Device for cutting a patella and method therefor. 4,565,192, Cl. 128-92.00H.
Sharma, Shri C.: *See—*
Morley, Robin C.; and Sharma, Shri C., 4,565,702, Cl. 426-93.000.
Shaw, Mark L., to Specific Cruise Systems, Inc. Test circuit for motor vehicle speed control. 4,565,963, Cl. 324-51.000.
Shaw, Richard G.: *See—*
Bahl, Surinder K.; Canterino, Peter J.; and Shaw, Richard G., 4,565,847, Cl. 525-240.000.
Shebuski, Robert C., to Outboard Marine Corporation. Process and apparatus for surrounding foam pattern with sand. 4,565,227, Cl. 141-1.000.
Shek, Pang: *See—*
Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, 4,565,696, Cl. 424-88.000.
Shell Oil Company: *See—*
Corley, Larry S., 4,565,153, Cl. 118-405.000.
Laurendeau, Gilles H. Y.; and Leprince, Jean-Bernard G. H., 4,565,501, Cl. 417-267.000.
Schoenthal, Galeon W.; and Slaugh, Lynn H., 4,565,803, Cl. 502-303.000.
Wife, Richard L.; van Oort, Aart B.; van Leeuwen, Petrus W. N. M.; and van Doorn, Johannes A., 4,565,892, Cl. 568-14.000.
Shelton, J. Paul: *See—*
Steinberg, Richard; and Shelton, J. Paul, 4,566,013, Cl. 343-372.000.
Shelton, Mark E.: *See—*
Butler, Donald F.; and Shelton, Mark E., 4,565,258, Cl. 181-129.000.
Sherman, William S. Combined portable table and hand truck. 4,565,382, Cl. 280-47.180.
Sherrod, Donnell. Method for proportioning fuel usage by a fluid fueled apparatus. 4,565,207, Cl. 137-1.000.
Shibata, Fumio: *See—*
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.
Shibuya, Ikutoshi: *See—*
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, 4,565,758, Cl. 430-58.000.
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, to Kawasaki Seitetsu Kabushiki Kaisha; and Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method and apparatus for continuous casting of metal sheet. 4,565,240, Cl. 164-480.000.
Shiida, Masami: *See—*
Hirayama, Takeshi; Amano, Matsuo; Sakamoto, Shinichi; Shiida, Masami; and Baba, Shirou, 4,566,069, Cl. 364-431.120.
Shimakawa, Katsuhiko: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.
Shimanaka, Hiroshi: *See—*
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.
Shimano, Noriyuki, to Dainippon Screen Mfg. Co., Ltd. Picture signal detector and detection method for image reproducing system. 4,566,041, Cl. 358-284.000.
Shimizu, Akihiko: *See—*
Ohzeki, Osamu; Shimakawa, Katsuhiko; Shimizu, Akihiko; and Kanai, Toshio, 4,565,546, Cl. 44-51.000.
Shimizu, Kazuyuki: *See—*
Sato, Kiyosumi; and Shimizu, Kazuyuki, 4,566,103, Cl. 371-12.000.
Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, to Sumitomo Chemical Company, Limited. Heteropoly-acids and their production and use. 4,565,801, Cl. 502-209.000.
Shimoda, Mituhiko; Koinuma, Masahiro; and Ohta, Yoshitaka, to Asahi Kogaku Kogyo Kabushiki Kaisha. Rack for mounting two electronic devices connectable to and disconnectable from each other. 4,566,054, Cl. 361-422.000.
Shinada, Shinichi: *See—*
Okamoto, Yukio; Shinada, Shinichi; and Okabe, Tadao, deceased, 4,566,006, Cl. 340-771.000.
Shino-Test Laboratory Co., Ltd.: *See—*
Motonaga, Hideo; and Naito, Masahiro, 4,565,780, Cl. 435-20.000.
Shiplay Company Inc.: *See—*
Cardin, William J.; Gulla, Michael; and Newton, Charles L., 4,565,575, Cl. 106-1.220.
Shoji, Fusaji: *See—*
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.
Shone, Robert L.: *See—*
Miyano, Masateru; and Shone, Robert L., 4,565,882, Cl. 549-399.000.
Short, James N.; and McDaniel, Max P., to Phillips Petroleum Company. Polymerization and catalysts. 4,565,795, Cl. 502-110.000.
Show-Me Low Calorie Foods, Inc.: *See—*
Snider, H. Keith, 4,565,705, Cl. 426-270.000.
Shu, Winston R.: *See—*
Pebdani, Farrokh N.; and Shu, Winston R., 4,565,249, Cl. 166-303.000.
Shutoh, Kuniharu: *See—*
Ikehata, Shigeki; Shutoh, Kuniharu; and Aoyagi, Kazuya, 4,565,664, Cl. 264-130.000.
Sibley, Bruce D.: *See—*
Gray, Kevin J.; and Sibley, Bruce D., 4,565,120, Cl. 92-130.00R.
Sieber, Albrecht: *See—*
Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, 4,565,170, Cl. 123-359.000.
Siegel, Paul H.: *See—*
Langdon, Glen G., Jr.; and Siegel, Paul H., 4,566,044, Cl. 360-40.000.
Sieger, Heinz; and Tomaschek, Heinz, to Teroson GmbH. Cyanoacrylate adhesive composition. 4,565,883, Cl. 549-475.000.
Siemens Aktiengesellschaft: *See—*
Brunn, Klaus; and Polster, Walter, 4,566,115, Cl. 378-097.000.
Diepers, Heinrich, 4,564,980, Cl. 29-25.350.
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.
Fenk, Josef; and Stepp, Richard, 4,565,978, Cl. 331-117.00R.
Frieling, Focko, 4,565,933, Cl. 307-269.000.
Gegner, Peter; and Vollnhals, Friedemann, 4,565,975, Cl. 331-1.00A.
Grosse, Joachim; Tiefel, Guenter; and Haufe, Wolfgang, 4,565,590, Cl. 148-431.000.
Hanni, Manfred; and Hechfellner, Kurt, 4,566,009, Cl. 343-6.5LC.
Keil, Rudolf; and Mathyssek, Konrad, 4,565,558, Cl. 65-1.000.
Krause, Dieter, 4,565,310, Cl. 225-2.000.
Magerl, Johann, 4,566,099, Cl. 370-100.000.
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.
Nilsson, Kenth, 4,566,017, Cl. 346-140.00R.
Nilsson, Kenth, 4,566,018, Cl. 346-140.00R.
Schmid, Norbert; and Schonwald, Siegfried, 4,565,498, Cl. 417-68.000.
Schuocker, Dieter; and Klement, Ekkehard, 4,566,077, Cl. 364-845.000.
Walther, Albert, 4,565,288, Cl. 206-328.000.
Siemens Corporate Res. & Support, Inc.: *See—*
Diaz, Felix V., 4,566,093, Cl. 370-14.000.
Siemens Eleman AB: *See—*
Nilsson, Kenth, 4,566,017, Cl. 346-140.00R.
Sigma Enterprises Incorporated: *See—*
Hagiwara, Takashi, 4,565,275, Cl. 194-97.00R.
Signetics Corporation: *See—*
Fang, Sheng; and Rao, Kameswara K., 4,566,080, Cl. 365-185.000.
Sills, Bernard: *See—*
Sills, Kenneth; and Sills, Bernard, 4,565,721, Cl. 428-36.000.

Sills, Kenneth; and Sills, Bernard. Carbowax sticks for preparation of the carbowax fixative use in cancer cytology. 4,565,721, Cl. 428-36.000.

Simeth, Claus; and Despot, Janko, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for the automatic pile change at the delivery of a printing. 4,565,129, Cl. 101-240.000.

Simmons U.S.A. Corporation: *See—*
Stumpf, Walter, 4,565,046, Cl. 53-114.000.

Simon-Johnson, Inc.: *See—*
Scheier, Donald J.; and Hathorn, Jack L., 4,564,977, Cl. 17-11.000.

Simpson, Roy G., to Adams Plastics, Inc. Halter saver. 4,565,055, Cl. 54-24.000.

Sims, Dewey M., Jr.; and Haas, Robert T., to Northern Telecom Limited. Transducer head indexing device and method. 4,566,049, Cl. 360-106.000.

Singer Company, The: *See—*
McGann, Leo E., 4,565,142, Cl. 112-260.000.

Singer, Irwin L.; and Jeffries, Russell A., to United States of America, Navy. Process for producing carbide coatings. 4,565,710, Cl. 427-35.000.

Singh, Daljit: *See—*
Gary, James R.; Geis, Everett R.; King, Todd L.; and Singh, Daljit, 4,565,957, Cl. 318-723.000.

Sintef: *See—*
Lydersen, Aksel, 4,565,634, Cl. 210-718.000.

SIRAC S.p.A.: *See—*
Filippini, Andrea; and Carobbi, Renato, 4,565,582, Cl. 127-46.100.

Sirenius, Kurt: *See—*
Mansson, Bjorn; Sirenius, Kurt; and Sundin, Birger, 4,565,662, Cl. 264-113.000.

Siteg Siebtechnik GmbH: *See—*
Lefferts, Johannes, 4,564,992, Cl. 29-429.000.

SKF Nova AB: *See—*
Nilsson, Sven W., 4,565,464, Cl. 403-290.000.

Skiles, Jerry W.: *See—*
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, 4,565,825, Cl. 514-394.000.

Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., to United Technologies Corporation. Oscillatory failure monitor. 4,566,101, Cl. 371-5.000.

Skovdal, Jorgen, to Clairol Incorporated. Vapor generating hair roller. 4,565,204, Cl. 132-39.000.

Slaghuis, Hermann; Mayer, Rolf; Kargel, Heribert; and Bender, Heinz G., to Schlafhorst & Co. Method and device for avoiding the formation of ribbon windings when winding cheeses. 4,565,332, Cl. 242-18.100

Slamecka, Ernst. High-voltage circuit-breaker. 4,565,911, Cl. 200-148.00A.

Slaugh, Lynn H.: *See—*
Schoenthal, Galeon W.; and Slaugh, Lynn H., 4,565,803, Cl. 502-303.000.

Slocum, D. Barclay. Apparatus and method for performing cuneiform osteotomy. 4,565,191, Cl. 128-92.00H.

Smagin, Vsevolod G.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

Smierciak, Richard C.: *See—*
Giordano, Paul J., Jr.; and Smierciak, Richard C., 4,565,799, Cl. 502-155.000.

Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N. Pharmaceutical preparation for the treatment of peptic ulcer. 4,565,805, Cl. 514-17.000.

Smiser Industries, Inc.: *See—*
Arnold, William S., 4,565,099, Cl. 73-862.410.

Smith, Danny L.: *See—*
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Smith, Dennis E.: *See—*
Rudy, William J.; and Smith, Dennis E., 4,565,416, Cl. 339-59.00M.

Smith, Donald F., to General Dynamics Corporation. Internal hydraulic clamp. 4,565,476, Cl. 409-225.000.

Smith, Henry I.: *See—*
Geis, Michael W.; Smith, Henry I.; Antoniadis, Dimitri A.; and Flanders, Dale C., 4,565,599, Cl. 156-603.000.

Smith, Ian S.: *See—*
Chalk, Anthony J.; Charnock, Graham; Gates, Allen P.; Murray, David E.; and Smith, Ian S., 4,565,757, Cl. 430-83.000.

Smith, James A.; and Murphy, Betty J., to Creative Products Resource Associates, Ltd. Floor cleaning and waxing composition. 4,565,644, Cl. 252-92.000.

Smith Locks, Inc.: *See—*
Smith, Robert J., 4,565,079, Cl. 70-134.000.

Smith, Moe S. Tamper evident container shroud. 4,565,294, Cl. 215-251.000.

Smith, Robert J., to Smith Locks, Inc. Deadbolt gate lock. 4,565,079, Cl. 70-134.000.

Smith, Roderick A.: *See—*
Chaplin, George B. B.; and Smith, Roderick A., 4,566,118, Cl. 381-71.000.

Smith, Samuel C. Spring type ball projecting device. 4,565,183, Cl. 124-26.000.

Smits, Philippus R. J., to CBL Consolidated Ltd. BS. Roofing-material. 4,565,724, Cl. 428-138.000.

Smoot, Lanny S., to AT&T Bell Laboratories. Optical receiver circuit with active equalizer. 4,565,974, Cl. 330-304.000.

Snider, H. Keith, to Show-Me Low Calorie Foods, Inc. Production of Jerusalem artichoke flour. 4,565,705, Cl. 426-270.000.

Sochtig, Wolfgang: *See—*
Grgic, Ivica; and Sochtig, Wolfgang, 4,565,085, Cl. 73-19.000.

Societe a Responsabilite Limitee dite: *See—*
Hautemont, Jean-Claude, 4,565,052, Cl. 53-453.000.

Societe Anonyme de Telecommunications: *See—*
Fleury, Joel J.; and Maille, Jacques H. P., 4,566,024, Cl. 357-32.000.
Lonnoy, Jacques J.; and Mousson, Roland, 4,565,339, Cl. 244-3.130.

S.A. Heuliez DEA: *See—*
Girodin, Georges H., 4,565,118, Cl. 92-68.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." : *See—*
Bart, Jacques R.; Jourdain, Gerard E. A.; and Rambach, Daniel, 4,565,492, Cl. 415-175.000.

Societe Nationale Elf Aquitaine: *See—*
Francois, Bernard; and Mathis, Claude, 4,565,650, Cl. 252-518.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Arretz, Emmanuel; Mirassou, Alfred; Landoussy, Claude; and Auge, Patrick, 4,565,893, Cl. 568-72.000.

Soderberg, Paul B. Oil well pump system and method. 4,565,496, Cl. 417-46.000.

Sogandares, Franklin, to Southern Methodist University. Device for inserting and removing tubes from stoppers. 4,564,989, Cl. 29-235.000.

Soleiman, Mohamad K.: *See—*
Rao, Yalamanchili K.; and Soleiman, Mohamad K., 4,565,674, Cl. 423-137.000.

Solex Research Corporation of Japan: *See—*
Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, 4,565,675, Cl. 423-140.000.

Solid State Devices, Inc.: *See—*
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.

Solomon, Martin D. Lock assembly. 4,565,078, Cl. 70-95.000.

Soloway, David J. Laryngoscope. 4,565,187, Cl. 128-11.000.

Solvay & Cie: *See—*
Schoberle, Robert; and Schaffer, Walter, 4,565,613, Cl. 204-99.000.

Sommer, Harold Z.: *See—*
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.

Sonnet, Philip E.: *See—*
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.

Sony Corporation: *See—*
Arakawa, Seiichi; Kondo, Hirofumi; and Seto, Junetsu, 4,565,779, Cl. 430-962.000.

Sorbo, Inc.: *See—*
Vasko, Kent A., 4,565,250, Cl. 168-12.000.

Sossong, Henry J.: *See—*
Draizen, Seymour; and Sossong, Henry J., 4,565,237, Cl. 164-463.000.

Sound Attenuators Limited: *See—*
Chaplin, George B. B.; and Smith, Roderick A., 4,566,118, Cl. 381-71.000.

Southerland, Ebbin R., Jr., to Texas Instruments Incorporated. Dynamic clocking system using six clocks to achieve six delays. 4,565,934, Cl. 307-481.000.

Southern Methodist University: *See—*
Sogandares, Franklin, 4,564,989, Cl. 29-235.000.

Southwest Research Institute: *See—*
Light, Glenn M.; and Van der Veer, William R., 4,565,095, Cl. 73-621.000.

Southworth, Ted J. Sawhorse with extendible and contractible leg assemblies. 4,565,263, Cl. 182-184.000.

Spamer, William S.; and Preis, Alan D., to Mead Corporation, The. Composite plastic track and method of making. 4,565,725, Cl. 428-167.000.

Spannbauer, Helmut: *See—*
Alf, Herbert; Leipelt, Rudolf; Fusser, Rolf; and Spannbauer, Helmut, 4,565,176, Cl. 123-556.000.

Specific Cruise Systems, Inc.: *See—*
Shaw, Mark L., 4,565,963, Cl. 324-51.000.

Spengel, Heinz F. J., Sr., to Blohm & Voss AG. Cargo handling apparatus with a cargo boom which can be swung in a swivel bearing between two kingposts. 4,565,292, Cl. 212-232.000.

Speranza, George P.: *See—*
Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., 4,565,866, Cl. 544-176.000.

Spiro, Clifford L.; and Lamby, Edward J., to General Electric Company. Method for producing water soluble resols and use therefor. 4,565,248, Cl. 166-267.000.

Springer, Manfred H. Boat propeller guard. 4,565,533, Cl. 440-71.000.

Spry, Douglas O., to Eli Lilly and Company. Diazabicyclononene antibacterials. 4,565,655, Cl. 260-245.20R.

Spymark, Inc.: *See—*
Kaiser, Robert T., 4,565,367, Cl. 272-126.000.

Staats, Charles W., Jr.: *See—*
Powers, Avery W.; Cates, Guy L.; Staats, Charles W., Jr.; and Mullies, Jarrell W., 4,566,008, Cl. 340-941.000.

Stahl, Bernhard; and Bohm, Horst, to Optima Spanntechnik GmbH. Quick-acting clamping devices. 4,565,357, Cl. 269-32.000.

Stal Refrigeration AB: *See*—
Lindstrom, Paul, 4,565,508, Cl. 418-201.000.

Stalder, Herbert; and Briner, Emil, to Rieter Machine Works Ltd. Method and apparatus for false twist spinning. 4,565,063, Cl. 57-328.000.

Stamper, Richard W.; and Hultz, Robert C., to General Tire & Rubber Company, The. Vinyl chloride polymer laminate. 4,565,732, Cl. 428-215.000.

Standard Oil Company (Ohio), The: *See*—
Giordano, Paul J., Jr.; and Smierciak, Richard C., 4,565,799, Cl. 502-155.000.

Standard Telephones and Cables, Public Limited Company: *See*—
Sarson, Gary A.; and McKenzie, Michael P., 4,566,096, Cl. 370-62.000.

Stanley Electric Co., Ltd.: *See*—
Kouchi, Tadashi; and Urakami, Yoshiharu, 4,566,056, Cl. 362-297.000.

Stanley Works, The: *See*—
Kornbrekke, Henning N.; Cirkot, David M.; and Ranaudo, Anthony R., 4,565,029, Cl. 49-25.000.

Starek, Bruno: *See*—
Pichler, Josef; Puchegger, Karl; and Starek, Bruno, 4,565,127, Cl. 101-93.040.

Stauffer Chemical Co.: *See*—
Chavdarian, Charles G.; and Kanne, David B., 4,565,809, Cl. 514-112.000.
Curtis, Jeff K.; and Michaely, William J., 4,565,570, Cl. 71-105.000.
Herscovici, Eva J.; and Kim, Ki-Soo, 4,565,853, Cl. 525-530.000.
Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., 4,565,680, Cl. 423-310.000.

Stautland, Thomas; and Jacobsen, Steinar F., to Stord Bartz A/S. Screw presses. 4,565,124, Cl. 100-117.000.

Stearns Catalytic World Corp.: *See*—
Sage, Warnie L.; and Stringfellow, Thomas E., 4,565,139, Cl. 110-347.000.

Steel Heddle Mfg. Co.: *See*—
Hall, Wayne A., 4,565,223, Cl. 139-91.000.

Steetley Refractories Limited: *See*—
Pearce, Kenneth W., 4,565,637, Cl. 210-770.000.

Stegeman, George I.: *See*—
Seymour, Robert J.; and Stegeman, George I., 4,565,422, Cl. 350-96.190.

Steimer, Helmut: *See*—
Grieshaber, Hermann; Sieber, Albrecht; Schueler, Peter; and Steimer, Helmut, 4,565,170, Cl. 123-359.000.

Stein, Karl H.; and Krull, Manfred, to Carl Freudenberg, Firma. Fibrous surgical compress with cover layer autogenously bonded to absorption layer. 4,565,736, Cl. 428-286.000.

Stein, Karl-Ulrich: *See*—
Donges, Gerhard; Herwig, Thomas; Kunze, Claus; and Stein, Karl-Ulrich, 4,566,113, Cl. 378-57.000.

Steinberg, Richard; and Shelton, J. Paul, to United States of America, Navy. Coupled amplifier module feed networks for phased array antennas. 4,566,013, Cl. 343-372.000.

Stender, Hans-Georg: *See*—
Blaurock, Gunter; Albert, Ernst; Blaurock, Werner; Peichl, Benno; Reichert, Klaus; Stender, Hans-Georg; and Schlereth, Rudolf, 4,564,993, Cl. 29-434.000.

Stephan, Gerhard, to AVA Tech International Ltd. Christmas tree stand. 4,565,028, Cl. 47-39.000.

Stephens, Frank H.: *See*—
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Stephens, John: *See*—
de Buda, Francis, 4,565,794, Cl. 502-83.000.

Stepp, Richard: *See*—
Fenk, Josef; and Stepp, Richard, 4,565,978, Cl. 331-117.00R.

Sterling Drug Inc.: *See*—
Yuhl, Edward J., Jr., 4,565,308, Cl. 222-632.000.

Stern, Richard A.; and Mariani, Elio A., to United States of America, Army. Millimeter-wave electronic phase shifter using Schottky barrier control. 4,565,982, Cl. 333-157.000.

Stern, Timothy R.: *See*—
Lake, Ralph J., Jr.; Bakthavachalam, Nanjappa; Kachnowski, Thomas A.; Buist, Kevin S.; Walz, David K.; Stern, Timothy R.; and Stephens, Frank H., 4,565,343, Cl. 248-346.000.

Stewart, Iain G. H.; Pitz, Hans P.; and Brinker, Alfred, to Maschinenfabrik Fr. Niepmann GmbH & Co. Apparatus for conveying cigarette-filled trays to a cigarette-packaging machine. 4,565,203, Cl. 131-283.000.

Stewart-Riess Laboratories, Inc.: *See*—
Jeensalute, Thipthep; and Chakkaw, Somkiat, 4,565,500, Cl. 417-53.000.

Stiansen & Oya A/S: *See*—
Oya, Anders, 4,565,018, Cl. 37-232.000.

Stilwell, George R., Jr.: *See*—
Harbour, Edward E.; Lynch, Robert C.; and Stilwell, George R., Jr., 4,566,134, Cl. 455-607.000.

Stoesz, James D.: *See*—
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased, 4,565,663, Cl. 264-120.000.

Stokes, John H.; Clark, John I.; and Maxwell, Charles E., to Energy Optics, Inc. Anti-energy diversion system for electric utility meters. 4,565,995, Cl. 340-571.000.

Stolben, Hans-Adolf, to Kraftwerk Union Aktiengesellschaft. Relative-distance pickup. 4,565,008, Cl. 33-172.00E.

Stoll, Kurt. Connection block. 4,565,259, Cl. 181-230.000.

Stoll, Wolfgang: *See*—
Schneider, Volker; Stoll, Wolfgang; and Druckenbrodt, Wolf-Gunther, 4,565,672, Cl. 423-15.000.

Stone, Walter H.: *See*—
Wilson, Michael E.; Olson, David R.; Stone, Walter H.; and MacDonald, Robin B., 4,565,629, Cl. 210-248.000.

Stord Bartz A/S: *See*—
Berge, Odd; and Hovland, Helge, 4,565,709, Cl. 426-641.000.
Stautland, Thomas; and Jacobsen, Steinar F., 4,565,124, Cl. 100-117.000.

Stouffer, Ronald D., to Bowles Fluidics Corporation. Liquid metering and fluidic transducer for electronic computers. 4,565,220, Cl. 137-835.000.

Stratoflex, Inc.: *See*—
Vyse, Gerrard N., 4,565,392, Cl. 285-23.000.

Streli, Elke. Pronged plate for resetting fractured bones. 4,565,193, Cl. 128-92.00D.

Strickland, William A., Jr., to Westinghouse Electric Corp. Ground-fault protective relay. 4,566,053, Cl. 361-42.000.

Stringfellow, Thomas E.: *See*—
Sage, Warnie L.; and Stringfellow, Thomas E., 4,565,139, Cl. 110-347.000.

Struss, Thomas G. Martial arts practice device. 4,565,366, Cl. 272-76.000.

Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., to William H. Rorer, Inc. Heterocyclic amidinoureas. 4,565,826, Cl. 514-447.000.

Stumpf, Walter, to Simmons U.S.A. Corporation. Apparatus for manufacturing pocketed coil springs. 4,565,046, Cl. 53-114.000.

Suckle, Leonard I., to Motorola, Inc. Speech synthesis system. 4,566,117, Cl. 381-51.000.

Suda, Seiji: *See*—
Sugiura, Noboru; and Suda, Seiji, 4,565,171, Cl. 123-425.000.

Sueyasu, Masanobu: *See*—
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Sugano, Satoshi: *See*—
Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, 4,565,948, Cl. 313-487.000.

Sugatsune Industrial Co., Ltd.: *See*—
Sakamoto, Kazuhiko, 4,565,031, Cl. 49-130.000.

Sugi, Hikaru: *See*—
Fujiwara, Kenichi; Hasada, Eiichi; and Sugi, Hikaru, 4,565,072, Cl. 62-196.200.

Sugiura, Noboru; and Suda, Seiji, to Hitachi, Ltd. Knock controller for an internal combustion engine. 4,565,171, Cl. 123-425.000.

Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, to USV Pharmaceutical Corp. Antihypertensive N-benzimidazolyl- and N-imidazolyl-amino acid derivatives. 4,565,825, Cl. 514-394.000.

Sulzer Brothers Limited: *See*—
Meier, Werner, 4,565,216, Cl. 137-561.00A.

Sumitomo Chemical Company, Limited: *See*—
Kataoka, Yushin; Matsuda, Masaaki; Aoi, Masahiro; and Chino, Kunitake, 4,565,673, Cl. 423-112.000.
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,565,569, Cl. 71-103.000.
Shimizu, Shinkichi; Ichihashi, Hiroshi; and Nagai, Koichi, 4,565,801, Cl. 502-209.000.

Sumitomo Electric Industries, Ltd.: *See*—
Kato, Chiaki, 4,565,762, Cl. 430-99.000.

Sumitomo Metal Industries, Ltd.: *See*—
Ikehata, Shigeki; Shutoh, Kuniharu; and Aoyagi, Kazuya, 4,565,664, Cl. 264-130.000.
Okane, Koji; Nakajima, Hidemasa; Okamura, Shozo; Sueyasu, Masanobu; and Manago, Takashi, 4,565,551, Cl. 48-92.000.

Sumiyoshi, Masaharu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin-Warner Limited. Gear transmission mechanism with multiple layshafts. 4,565,106, Cl. 74-359.000.

Sumsion, Alton E.: *See*—
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,565,353, Cl. 266-147.000.

Sundin, Birger: *See*—
Mansson, Bjorn; Sirenius, Kurt; and Sundin, Birger, 4,565,662, Cl. 264-113.000.

Sung, Rodney L.: *See*—
Davis, Marshall E.; and Sung, Rodney L., 4,565,548, Cl. 44-51.000.

Suntory Limited: *See*—
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Super Brush Co., Inc.: *See*—
Taylor, Charles H., 4,565,205, Cl. 132-88.700.

Support Systems International, Inc.: *See*—
Goodwin, Vernon L., 4,564,965, Cl. 5-453.000.

Sutton, David L.; and Burkhalter, John F., to Halliburton Company. Gas generation retarded aluminum powder for oil field cements. 4,565,578, Cl. 106-87.000.

Sutton Engineering Company: *See*—
Thompson, E. Gordon, 4,565,083, Cl. 72-98.000.

Suzaki, Hidenori; Miura, Tetsuro; Maeda, Masanori; and Inaoka, Koji, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for demounting a spot welded metal plate. 4,565,914, Cl. 219-68.000.
Suzuki, Hiroshi, to Tachikawa Spring Co., Ltd. Lumbar support device. 4,565,406, Cl. 297-284.000.
Suzuki, Makoto; and Nomura, Kenichi, to Toyota Jidosha Kabushiki Kaisha. Fuel injection control apparatus. 4,565,174, Cl. 123-478.000.
Suzuki, Tatsuo, to Terumo Kabushiki Kaisha. Catheter insertion device. 4,565,545, Cl. 604-164.000.
Suzuki, Tetsuya. Process for preparation of substance having hypotensive component. 4,565,700, Cl. 424-195.100.
Suzuki, Tsunehiko, to Fuji Jukogyo Kabushiki Kaisha. Balancer structure for three-cylinder engines. 4,565,169, Cl. 123-192.00B.
Svecia Silkscreen Maskiner AB: *See*—
Ericsson, Sylve J. D., 4,565,478, Cl. 414-71.000.
Sweeney Enterprises, Inc.: *See*—
Sweeney, John W., 4,565,159, Cl. 119-53.000.
Sweeney, John W., to Sweeney Enterprises, Inc. Animal feeder. 4,565,159, Cl. 119-53.000.
Swiss Aluminium Ltd.: *See*—
Zehnder, Jurg, 4,565,135, Cl. 105-420.000.
Sygnator, Henry A., to Illinois Tool Works Inc. Drill point milling machine and method. 4,565,475, Cl. 409-131.000.
Symonds, Richard D.; Clapp, Joseph E.; and Buckley, Kenneth, to Amax Inc. Purification of molten lead. 4,565,573, Cl. 75-77.000.
Syntex (U.S.A.) Inc.: *See*—
Verheyden, Julien P. H.; and Martin, John C., 4,565,868, Cl. 544-276.000.
Szajna, John L.; and Weissenstein, Harry, to Continental Plastic Containers, Inc. Mold for large capacity containers. 4,565,516, Cl. 425-540.000.
Szebeni, Rudolf: *See*—
Kovacs, Andras; Szebeni, Rudolf; and Koszegi, Bela, 4,565,694, Cl. 424-80.000.
Szekely, Istvan; Lovasz nee Gaspar, Marianna; Kekesi, Krisztina; Botar, Sandor; Kormoczy, Peter; Hadhazy, Pal; Rakoczy, Istvan; and Fesus, Laszlo , to CHINOIN Gyogyszer es Vegyeszeti Termekek Gyara R.T. 7-Substituted PGI_2-derivatives and pharmaceutical compositions containing them. 4,565,827, Cl. 514-469.000.
Szentivanyi, Zsolt: *See*—
Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, 4,565,614, Cl. 522-112.000.
Szomor nee Wundele, Maria: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.
Szuts, Tamas: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.
Szvoboda nee Kanzel, Ida: *See*—
Korbonits, Dezso ; Szomor nee Wundele, Maria; Heja, Gergely; Szvoboda nee Kanzel, Ida; Kiss, Pal; Gonczi, Csaba; Palosi, Endre; Kovacs, Gabor; Kun, Judit; Minker, Emil; Virag, Sandor; Sebestyen, Gyula; and Szuts, Tamas, 4,565,817, Cl. 514-263.000.
Tachikawa Spring Co. Ltd.: *See*—
Iwami, Masahide, 4,565,344, Cl. 248-429.000.
Suzuki, Hiroshi, 4,565,406, Cl. 297-284.000.
Tachiki, Shigeo; Shibuya, Ikutoshi; Fujikura, Makoto; and Kakuta, Atsushi, to Hitachi, Ltd.; and Hitachi Chemical Company Ltd. Electrophotographic plate having a charge generating layer containing an organic pigment for charge generation. 4,565,758, Cl. 430-58.000.
Taiyo Seiki Iron Works Co., Ltd.: *See*—
Takaguchi, Hiroyuki, 4,564,984, Cl. 24-287.000.
Takada, Juichiro. Emergency locking seat belt retractor with automatic locking mechanism. 4,565,338, Cl. 242-107.40B.
Takada, Toshiya, to Toyoto Jidosha Kabushiki Kaisha; and Japan Bars Company Limited. Detergent composition for fuel-system parts. 4,565,547, Cl. 44-51.000.
Takagi, Masao: *See*—
Miyahara, Masayoshi; and Takagi, Masao, 4,565,102, Cl. 74-15.400.
Takagi, Shoyo: *See*—
Kobashi, Toshiyuki; Takagi, Shoyo; and Naka, Hideo, 4,565,832, Cl. 521-63.000.
Takagi, Toshinori: *See*—
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,565,741, Cl. 428-427.000.
Takaguchi, Hiroyuki, to Taiyo Seiki Iron Works Co., Ltd. Positioning cone for containers. 4,564,984, Cl. 24-287.000.
Takahara, Susumu. Method of forming building foundation with vents. 4,565,044, Cl. 52-741.000.
Takahashi, Hiroshi, to Ikegami Tsushinki Co. Ltd. Apparatus for automatically inserting electronic parts into printed circuit board. 4,566,071, Cl. 364-468.000.
Takahashi, Hiroshi: *See*—
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.
Takahashi, Ken; Jimbou, Ryutarou; Matsushita, Yasuo; Yamada, Seiichi; and Kosugi, Tetuo, to Hitachi, Ltd. Ignition distributor for internal combustion engine. 4,565,907, Cl. 200-19.0DR.
Takahashi, Shuuji: *See*—
Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, 4,565,750, Cl. 429-72.000.
Takahashi, Tomoji: *See*—
Nakako, Yukio; Matsumura, Tetsuo; Ozawa, Toshio; Saito, Kaizaburo; Katsushima, Shin-ichi; Oya, Shin-ichi; Okui, Toshiaki; Mito, Yutaka; Okuma, Osamu; and Takahashi, Tomoji, 4,565,622, Cl. 208-10.000.
Takanashi, Masami: *See*—
Yashima, Michio; Takanashi, Masami; and Komatsu, Akihiro, 4,565,909, Cl. 200-61.850.
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, to Zenyaku Kogyo Kabushiki Kaisha. 1,4-Thiazine derivatives. 4,565,813, Cl. 514-222.000.
Takasu, Yoshio: *See*—
Katagiri, Kazuharu; Oguchi, Yoshihiro; and Takasu, Yoshio, 4,565,761, Cl. 430-83.000.
Takata, Akira; and Matsuoka, Shigeki, to Ricoh Company, Ltd. Power supply switching circuit. 4,565,960, Cl. 323-317.000.
Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, to Takenaka Komuten Co., Ltd.; and Nankoso Ltd. Passive-type solar device. 4,565,186, Cl. 126-428.000.
Takatori Machinery Mfg. Co., Ltd.: *See*—
Nishikawa, Masao; and Saibe, Seiichi, 4,565,047, Cl. 53-137.000.
Takatsu, Norihiko; Kawahara, Atsushi; and Isogai, Masaki, to Nippon Kogaku K.K. Solid-state area imaging apparatus. 4,566,037, Cl. 358-213.000.
Takaya, Matsuhiko: *See*—
Miyagawa, Michiaki; Ohki, Kouichi; Takaya, Matsuhiko; Fujihara, Naoto; and Yamada, Tadayuki, 4,566,126, Cl. 382-48.000.
Takaya, Sueji: *See*—
Negishi, Hideo; Goto, Kaoru; and Takaya, Sueji, 4,565,471, Cl. 408-204.000.
Takeda Chemical Industries, Ltd.: *See*—
Azuma, Junichi; Watanabe, Koichi; and Hori, Masatake, 4,565,626, Cl. 210-138.000.
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,565,865, Cl. 544-110.000.
Takeda, Hiroyuki: *See*—
Hosoi, Kinji; Kobayashi, Hisao; Takeda, Hiroyuki; and Hibino, Mitsuyoshi, 4,565,358, Cl. 269-60.000.
Takeda, Keiso, to Toyota Jidosha Kabushiki Kaisha. Intake system for an internal combustion engine. 4,565,166, Cl. 123-52.00M.
Takei, Sakae: *See*—
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,565,712, Cl. 427-53.100.
Takemoto, Issei: *See*—
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.
Takenaka Komuten Co., Ltd.: *See*—
Takata, Junzo; Jinushi, Michio; and Hashizume, Mitsuo, 4,565,186, Cl. 126-428.000.
Takenaka, Yuuichi: *See*—
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, 4,565,462, Cl. 400-625.000.
Takenouchi, Mutsuo: *See*—
Ozawa, Takashi; and Takenouchi, Mutsuo, 4,566,040, Cl. 358-293.000.
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. Process of using radiation-sensitive carrier body to form stamper structure and subsequent use as a stamper to make optical disks. 4,565,772, Cl. 430-320.000.
Takeuchi, Hiroshi: *See*—
Jyomura, Shigeru; and Takeuchi, Hiroshi, 4,565,642, Cl. 252-62.900.
Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.
Takiguchi, Hideki: *See*—
Miyamoto, Akihiko; Takiguchi, Hideki; Matsuzaka, Shoji; Kashiwagi, Hiroshi; and Nonaka, Yoshiyuki, 4,565,778, Cl. 430-567.000.
Talbert, Norwood K. Method of producing fertilizer product containing sewage sludge. 4,565,563, Cl. 71-12.000.
Tamaki, Koichi: *See*—
Ohya, Yoshio; Sano, Junichi; and Tamaki, Koichi, 4,565,121, Cl. 99-281.000.
Tamburrino, Richard A.: *See*—
Pawlikowski, Stanley L.; Penird, Carl W.; and Tamburrino, Richard A., 4,565,945, Cl. 313-404.000.
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, to Hitachi, Ltd. Method of producing single crystal film utilizing a two-step heat treatment. 4,565,584, Cl. 148-1.500.
Tamura, Masayoshi: *See*—
Hasegawa, Hirosi; Onuma, Tatsuro; Matsubayashi, Norio; and Tamura, Masayoshi, 4,566,079, Cl. 365-1.000.
Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Laser recording apparatus. 4,566,043, Cl. 358-300.000.
Tanaami, Yoshiaki: *See*—
Shibuya, Kiyoshi; Kan, Takahiro; Ito, Yo; Shimanaka, Hiroshi; and Tanaami, Yoshiaki, 4,565,240, Cl. 164-480.000.
Tanabe, Kozo: *See*—
Otake, Noboru; Hayakawa, Yoichi; Kawai, Hiroyuki; Nakagawa, Masaya; Tanabe, Kozo; and Mochizuki, Junichiro, 4,565,781, Cl. 435-88.000.

Tanabe, Osami: *See—*
Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, 4,565,777, Cl. 430-552.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Tanabe, Takeo, to Nippon Felt Co., Ltd. Felt for paper manufacture and method for producing the same. 4,564,985, Cl. 28-142.000.

Tanagawa, Kouji, to OKI Electric Industry Co. Watchdog timer. 4,566,111, Cl. 377-28.000.

Tanaka, Akira: *See—*
Asai, Isao; Muramatsu, Shigeru; Morita, Takayuki; and Tanaka, Akira, 4,565,278, Cl. 198-400.000.

Tanaka, Hiroshi: *See—*
Ohtake, Yasuhisa; and Tanaka, Hiroshi, 4,565,755, Cl. 430-5.000.

Tanaka, Katsuake: *See—*
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.

Tanaka, Kunifusa, to Kabushiki Kaisha Ishida Koki Seisakusho. Method of counting parts. 4,566,070, Cl. 364-567.000.

Tanaka, Masaru; and Abe, Hideo, to Fuji Giken Kabushiki Kaisha. Bank note dispenser. 4,565,361, Cl. 271-10.000.

Tanaka, Shigeru: *See—*
Yano, Naomichi; Ito, Hajime; and Tanaka, Shigeru, 4,565,242, Cl. 165-10.000.

Tanaka, Takaharu: *See—*
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, 4,565,698, Cl. 424-93.000.

Tani, Masanori; Eto, Shin'ichi; Funakoshi, Takeshi; Nishikawa, Susumu; and Hashikura, Kiyoteru, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Brake system for vehicles. 4,565,067, Cl. 60-545.000.

Taniguchi, Hiroyuki; and Tsukahara, Hiroaki, to Yanmar Diesel Engine Co. Ltd. Unit injector of internal combustion engine. 4,565,320, Cl. 239-90.000.

Taniuchi, Keiji. Safe opening container lid. 4,565,298, Cl. 220-273.000.

Tanner, Hans: *See—*
Fischer, Kurt; and Tanner, Hans, 4,565,233, Cl. 164-37.000.
Fischer, Kurt; and Tanner, Hans, 4,565,235, Cl. 164-169.000.

Tapp, William T.; and Roberts, William M., to Elder, Inc. Wireline set tubing retrievable seal bore packer apparatus. 4,565,247, Cl. 166-123.000.

Taprogge Gesellschaft mbH: *See—*
Bitzer, Klaus M.; Eimer, Klaus; Grobe, Klaus; Mayer, Georg; and Patzig, Dieter, 4,565,631, Cl. 210-333.100.

Tassy, Tomas. Life preserver device. 4,565,535, Cl. 441-118.000.

Tatsumi, Masashi: *See—*
Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, 4,565,807, Cl. 514-58.000.

Taylor, Charles H., to Super Brush Co., Inc. Molded mascara applicator. 4,565,205, Cl. 132-88.700.

Taylor, Harold E. Tool for holding a blade for installation and removal thereof. 4,564,991, Cl. 29-426.500.

Taylor, William L.: *See—*
Aertker, Walter P.; Taylor, William L.; and Medica, Frank, 4,565,529, Cl. 440-7.000.

Taylor, Zane S.: *See—*
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,565,353, Cl. 266-147.000.

Teape, John W.: *See—*
Zimmermann, Peter; and Teape, John W., 4,565,956, Cl. 318-721.000.

Teche, Andre : *See—*
Tessier, Jean; Teche, Andre ; and Girault, Pierre, 4,565,822, Cl. 514-351.000.

Technicon Instruments Corporation: *See—*
Malin, Michael J.; Loev, Bernard; and Hwang, Deng R., 4,565,688, Cl. 424-3.000.

Tecumseh Products Company: *See—*
Wise, Kennard L., 4,565,503, Cl. 417-372.000.

Tektronix, Inc.: *See—*
Anderson, Russell Y., 4,566,082, Cl. 365-230.000.
Davenport, William H., 4,565,977, Cl. 331-113.00R.

Temp. Systems, Inc.: *See—*
Theiss, John J.; and Durst, Paul T., 4,565,920, Cl. 219-513.000.

Templeman, Arthur R., to Peterson Manufacturing Company. Mirror assembly. 4,565,345, Cl. 248-481.000.

Tennessee Valley Authority: *See—*
Hsieh, Shuang-shii; and Lehr, James R., 4,565,625, Cl. 209-167.000.

Tension Envelope Corporation: *See—*
Kranz, Richard, 4,565,317, Cl. 229-73.000.

Tenyo Co., Ltd.: *See—*
Kondo, Hiroshi, 4,565,364, Cl. 272-8.00N.

Tepermeister, Gary: *See—*
Hatch, Richard G.; and Tepermeister, Gary, 4,565,632, Cl. 210-656.000.

Terada, Akihiro: *See—*
Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, 4,565,400, Cl. 294-88.000.

Teraoka Seiko Co., Ltd.: *See—*
Matsuura, Yoshikazu, 4,565,254, Cl. 177-25.000.

Terashima, Kenji: *See—*
Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, 4,565,948, Cl. 313-487.000.

Teroson GmbH: *See—*
Sieger, Heinz; and Tomaschek, Heinz, 4,565,883, Cl. 549-475.000.

Terranova, Victor: *See—*
Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, 4,565,789, Cl. 436-504.000.

Terumo Kabushiki Kaisha: *See—*
Suzuki, Tatsuo, 4,565,545, Cl. 604-164.000.

Tessier, Jean; Teche, Andre ; and Girault, Pierre, to Roussel Uclaf. 2-Fluoro-2-cyanoethenyl cyclopropane carboxylates as pesticides. 4,565,822, Cl. 514-351.000.

Tex-nology Systems, Inc.: *See—*
Wiley, Robert T., 4,565,362, Cl. 271-225.000.

Texaco Inc.: *See—*
Davis, Marshall E.; and Sung, Rodney L., 4,565,548, Cl. 44-51.000.
Duranleau, Roger G.; Knifton, John F.; and Speranza, George P., 4,565,866, Cl. 544-176.000.
Frazier, Terry L.; and Dozier, Jan D., 4,565,246, Cl. 166-112.000.
Knifton, John F.; and Duranleau, Roger G., 4,565,896, Cl. 568-852.000.
Livingston, David R.; McEntire, Edward E.; and Nieh, Edward C., 4,565,889, Cl. 564-205.000.
Mims, Donald S.; and Allen, Richard S., 4,565,245, Cl. 166-50.000.

Texas A&M University System, The: *See—*
Chiou, George C. Y., 4,565,821, Cl. 514-327.000.

Texas Instruments Incorporated: *See—*
Clunn, Robert H., 4,566,125, Cl. 382-48.000.
Guttag, Karl M., 4,566,075, Cl. 364-754.000.
Southerland, Ebbin R., Jr., 4,565,934, Cl. 307-481.000.

Thatcher, Gordon: *See—*
Duncombe, Edward; and Thatcher, Gordon, 4,565,667, Cl. 376-246.000.

Theis, Ulrich, to Rheinmetall GmbH. Form-locking means, material for forming same and process for arranging the form-locking means in the peripheral region of a projectile made out of the heavy metal sinter alloy. 4,565,132, Cl. 102-517.000.

Theiss, John J.; and Durst, Paul T., to Temp. Systems, Inc. Fail safe thermal control device. 4,565,920, Cl. 219-513.000.

Thermacore, Inc.: *See—*
Ernst, Donald M.; and Sanzi, James L., 4,565,243, Cl. 165-104.260.

Thermax Wire Corporation: *See—*
Kuettner, Horst, 4,565,594, Cl. 156-47.000.

Therolf, Dieter: *See—*
Brinkmann, Dirk; Muller, Wolfgang; Sauerwald, Walter; Schmidts, Klaus; Therolf, Dieter; and Weber, Ulrich, 4,565,517, Cl. 425-451.200.

Thies, Curt, to Nimrod Press, Inc., The. Spirit duplicating with indicia formed by ink comprising dye means and smudge-resistant binder means soluble in spirit duplicating fluid. 4,565,841, Cl. 524-31.000.

Thigpen, Ben B., to Western Geophysical Company of America. Seismic timing control system. 4,566,083, Cl. 367-21.000.

Thomas, Roger E.; and Best, David E., to Melamine Chemicals, Inc. Anhydrous high-pressure melamine synthesis. 4,565,867, Cl. 544-201.000.

Thompson, E. Gordon, to Sutton Engineering Company. Straightening rolls. 4,565,083, Cl. 72-98.000.

Thomson-CSF: *See—*
Castera, Jean-Paul; and Dupont, Jean-Marie, 4,565,984, Cl. 333-202.000.
Gerard, Jean-Louis; and Loret, Marc, 4,566,091, Cl. 369-47.000.
Gerard, Jean-Louis; Lehureau, Claude; and Loret, Marc, 4,566,092, Cl. 369-59.000.
Heitzmann, Michel; and Boudot, Marianne, 4,566,027, Cl. 357-81.000.
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.

Thormer, Joachim: *See—*
Buding, Hartmuth; Szentivanyi, Zsolt; and Thormer, Joachim, 4,565,614, Cl. 522-112.000.

Thrush Incorporated: *See—*
Roberts, Peter, 4,564,987, Cl. 29-157.00R.

Tibbetts, Gary G.; and Devour, Michael G., to General Motors Corporation. Regulation of pyrolysis methane concentration in the manufacture of graphite fibers. 4,565,684, Cl. 423-447.300.

Tiefel, Guenter: *See—*
Grosse, Joachim; Tiefel, Guenter; and Haufe, Wolfgang, 4,565,590, Cl. 148-431.000.

Timbco Hydraulics Inc.: *See—*
Crawford, Patrick J.; and Klement, Larry G., 4,565,486, Cl. 414-729.000.

Timpte Industries: *See—*
Bartling, Jerry W.; and Hofstetter, James F., 4,565,071, Cl. 62-89.000.

Tinfow, Lionel. Threshold having a vertically adjustable flexible weatherstrip. 4,565,033, Cl. 49-468.000.

Titov, Mikhail I.: *See—*
Smirnov, Vladimir N.; Titov, Mikhail I.; Bespalova, Zhanna D.; Azmuko, Andrei A.; Sax, Tatyana R.; Medvedev, Oleg S.; Rozhanskaya, Nadezhda I.; Smagin, Vsevolod G.; Vinogradov, Valentin A.; Polonsky, Vladimir M.; Bulgakov, Sergei A.; and Ivanov, Vladimir N., 4,565,805, Cl. 514-17.000.

TOA Nenryo Kogyo Kabushiki Kaisha: *See—*
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.

Tobben, Johannes H.: *See—*
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.

Toczelowski, Hans: *See*—
Dussel, Klaus; Orlowski, Werner; Ott, Gerhard; and Toczelowski, Hans, 4,565,417, Cl. 339-94.00C.

Toda, Akitoshi: *See*—
Okada, Takao; Toda, Akitoshi; and Mimura, Yoshiyuki, 4,565,436, Cl. 355-3.00R.

Todd, Lanny E.; Burke, Philip E.; Smith, Danny L.; and Gleason, Carla T., to Stauffer Chemical Company. Recovery of phosphorus and aluminum from spent acid from the bright-dip aluminum finishing process. 4,565,680, Cl. 423-310.000.

Tojima, Hiromi; and Kajitani, Kouji, to Kabushiki Kaisha Daikin Seisakusho. Damper disk having hydraulic shock absorbers. 4,565,273, Cl. 192-106.200.

Tokico Ltd.: *See*—
Oguro, Sadao; Sakagami, Yukio; and Ando, Takayuki, 4,565,039, Cl. 52-167.000.

Tokunaga, Tomokazu; Izaki, Masataka; Kajino, Jirou; and Kamiyama, Toshibumi, to Matsushita Electric Industrial Co., Ltd. Tape cassette adapter. 4,566,048, Cl. 360-94.000.

Tokuyama, Takashi: *See*—
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fujiki, Masao; and Seguchi, Kazukuni, 4,566,046, Cl. 360-78.000.
Kimura, Yoshio; Terashima, Kenji; Asada, Masao; and Sugano, Satoshi, 4,565,948, Cl. 313-487.000.
Nagano, Katsumi, 4,565,959, Cl. 323-315.000.
Nagano, Katsumi, 4,565,973, Cl. 330-288.000.
Nishikawa, Mineki, 4,566,074, Cl. 364-571.000.
Noguchi, Hideo; Iwamoto, Tugunari; and Takei, Sakae, 4,565,712, Cl. 427-53.100.
Ochii, Kiyofumi, 4,566,081, Cl. 365-200.000.
Oguchi, Toshihiko; Kato, Hirohisa; Wada, Moriyasu; and Asano, Toshimitsu, 4,565,726, Cl. 428-328.000.
Ohtake, Yasuhisa; and Tanaka, Hiroshi, 4,565,755, Cl. 430-5.000.
Oya, Koichi, 4,566,039, Cl. 358-280.000.
Sakamoto, Shigemi; and Saito, Satoru, 4,565,992, Cl. 340-347.0AD.
Sekiya, Kunihiko; Sakai, Kunio; Hirai, Shoichi; Miyao, Shigeru; and Fukuda, Masatoshi, 4,566,127, Cl. 382-56.000.
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, 4,565,772, Cl. 430-320.000.

Tomaschek, Heinz: *See*—
Sieger, Heinz; and Tomaschek, Heinz, 4,565,883, Cl. 549-475.000.

Tomita, Hitoshi: *See*—
Kimura, Hideyuki; and Tomita, Hitoshi, 4,565,065, Cl. 60-285.000.

Tomlin, Jerry B., to Koomey, Inc. Fail safe hydraulic piloted pressure reducing and regulating valve. 4,565,349, Cl. 251-29.000.

Torelli, Vesperto: *See*—
Nedelec, Lucien; Torelli, Vesperto; and Hardy, Michel, 4,565,656, Cl. 260-397.470.

Torii, Nobutoshi: *See*—
Nakashima, Seiichiro; Torii, Nobutoshi; and Terada, Akihiro, 4,565,400, Cl. 294-88.000.

Tornberg, Claes: *See*—
Aslund, Christer; and Tornberg, Claes, 4,565,668, Cl. 419-68.000.

Torrington Company, The: *See*—
Achee, John D.; and Cuozzo, Anthony, 4,565,458, Cl. 384-561.000.

Toshiba Heating Appliances Co., Ltd.: *See*—
Ohya, Yoshio; Sano, Junichi; and Tamaki, Koichi, 4,565,121, Cl. 99-281.000.

Toth, Kalman. Computer aided stenographic system. 4,566,065, Cl. 364-300.000.

Towers, Frederic C. Securities valuation system. 4,566,066, Cl. 364-408.000.

Toyama, Takeshi: *See*—
Otaguro, Kunihiko; Takahashi, Hiroshi; Noguchi, Kazuma; Toyama, Takeshi; Ishikawa, Takashi; and Ebisawa, Isao, 4,565,463, Cl. 401-217.000.

Toyosawa, Takeshi: *See*—
Ayabe, Hideaki; Toyosawa, Takeshi; Ikeda, Shigeo; and Ohta, Ken-Ichiro, 4,565,918, Cl. 219-499.000.

Toyoshima, Isao: *See*—
Sakai, Katsumi; and Toyoshima, Isao, 4,565,942, Cl. 310-338.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Buma, Shuuichi, 4,565,151, Cl. 116-28.100.
Ito, Hiroshi, 4,565,110, Cl. 74-868.000.
Satoh, Masayuki; and Wada, Yoshisada, 4,565,164, Cl. 123-41.860.
Suzuki, Makoto; and Nomura, Kenichi, 4,565,174, Cl. 123-478.000.
Takeda, Keiso, 4,565,166, Cl. 123-52.00M.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Sumiyoshi, Masaharu, 4,565,106, Cl. 74-359.000.

Toyoto Jidosha Kabushiki Kaisha: *See*—
Takada, Toshiya, 4,565,547, Cl. 44-51.000.

Trak Incorporated: *See*—
Feichtlbauer, Werner, 4,565,387, Cl. 280-604.000.

Treadwell, Stephen S.: *See*—
Martell, Charles R.; Isett, Donald D.; and Treadwell, Stephen S., 4,565,140, Cl. 112-121.110.

Treiber, Helmut: *See*—
Benker, Gerhard; and Treiber, Helmut, 4,565,442, Cl. 355-68.000.

Trek Bicycle Corporation: *See*—
Isaac, Timothy S., 4,565,383, Cl. 280-276.000.

Trico Products Corporation: *See*—
Pethers, Peter C.; Duck, Ivan A.; and Carter, Malcolm A., 4,564,971, Cl. 15-250.350.

Trimnell, Lawrence J.: *See*—
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.

Troncoso, Fernando V., Jr.; and Troncoso, Vincent F. Hunting arrow and broadhead. 4,565,377, Cl. 273-422.000.

Troncoso, Vincent F.: *See*—
Troncoso, Fernando V., Jr.; and Troncoso, Vincent F., 4,565,377, Cl. 273-422.000.

Trotz, Samuel I.; and Fedynyshyn, Theodore H., to Olin Corporation. Pyrithione-containing bioactive polymers and their use in paint and wood preservative products. 4,565,856, Cl. 526-265.000.

Troxell, Lillian H.: *See*—
Johnston, Howard; and Troxell, Lillian H., 4,565,568, Cl. 71-94.000.

Trumbo, Leroy C.; and Feasel, Robert L., to Trumbo Welding & Fabricating Company, Inc. Pressure sealing closure system for retort vessels. 4,565,299, Cl. 220-323.000.

Trumbo Welding & Fabricating Company, Inc.: *See*—
Trumbo, Leroy C.; and Feasel, Robert L., 4,565,299, Cl. 220-323.000.

TRW Inc.: *See*—
Kaminskas, Rimvydas A., 4,565,745, Cl. 428-596.000.

Tsai, Yih-Wan: *See*—
Krumwiede, John F.; and Tsai, Yih-Wan, 4,565,560, Cl. 65-134.000.

Tsay, Chi-Chour. Instantaneous direction changing rotation mechanism. 4,565,109, Cl. 74-780.000.

Tsubone, Tsunehiko: *See*—
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.

Tsuchiya, Koji, to Precision Fukuhara Works, Ltd. Safety device for circular knitting machines. 4,565,076, Cl. 66-151.000.

Tsudakoma Kogyo Kabushiki Kaisha: *See*—
Tsuji, Kanji, 4,565,226, Cl. 139-435.000.

Tsuji, Eiji; Gotou, Akio; and Ichikawa, Kuniharu, to Matsushita Electric Works, Ltd. Electric hair curling iron with rotatable power cord. 4,565,916, Cl. 219-225.000.

Tsuji, Kanji, to Tsudakoma Kogyo Kabushiki Kaisha. Method and apparatus for shifting main nozzles on a fluid-jet type loom. 4,565,226, Cl. 139-435.000.

Tsuji, Nobuhiko; Nakamura, Keijiro; and Iike, Masanori, to Fuji Electric Company Limited. Diode failure detecting device in rotary rectifier. 4,565,998, Cl. 340-645.000.

Tsukada, Toshihisa: *See*—
Yamamoto, Hideaki; Baji, Toru; Tsukada, Toshihisa; and Sasano, Akira, 4,565,928, Cl. 250-578.000.

Tsukahara, Hiroaki: *See*—
Taniguchi, Hiroyuki; and Tsukahara, Hiroaki, 4,565,320, Cl. 239-90.000.

Tsumagari, Nobuchika: *See*—
Wada, Hiroshi; Ishii, Kazuhiro; Tsumagari, Nobuchika; Matsuo, Masaaki; and Matsumoto, Mikio, 4,565,877, Cl. 548-530.000.

Tsutsui, Kyoji, to Ricoh Co., Ltd. Plates for use in lithographic printing. 4,565,759, Cl. 430-66.000.

Tucker, Benjamin W.: *See*—
Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., 4,565,835, Cl. 521-155.000.

Tumlinson, James H., III: *See*—
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.

TX RX Systems, Inc.: *See*—
Kaegebein, Daniel P., 4,565,972, Cl. 330-124.00D.

Uchida, Takeshi: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, 4,565,861, Cl. 536-6.400.

Uchino, Kazuhiro; Watanabe, Toshio; Nakazato, Yoshio; Hoshino, Minoru; and Ishihara, Noboru, to Kawasaki Steel Corporation; Research Development Corporation; and Solex Research Corporation of Japan. Process for treating and recovering pickling waste liquids for stainless steel. 4,565,675, Cl. 423-140.000.

Uchiyama, Kaoru; and Ichikawa, Koji, to Fuji Photo Film Co., Ltd. Film handling mechanism. 4,564,999, Cl. 29-806.000.

Uchiyama, Masaki; and Mitsuhashi, Yasuo, to Canon Kabushiki Kaisha. Process for producing toner. 4,565,763, Cl. 430-109.000.

Uchiyama, Masaki: *See*—
Mitsuhashi, Yasuo; and Uchiyama, Masaki, 4,565,766, Cl. 430-126.000.

Ueda, Yasuhiro, to Olympus Optical Co., Ltd. Connecting device for an endoscope. 4,565,423, Cl. 350-171.000.

Ueda, Yoshihiko; Saito, Ikuo; Sakae, Kazumasa; and Oogiri, Tetuo, to Onoda Cement Co., Ltd. Thermal decomposition furnace of waste tires. 4,565,138, Cl. 110-346.000.

Uekama, Kaneto; Hanafusa, Mikio; Tatsumi, Masashi; and Hibi, Tohru, to Ciba-Geigy Corporation. Medicinal composition containing pirprofen and cyclodextrin and a method of use. 4,565,807, Cl. 514-58.000.

Uemura, Isamu: *See*—
Mochida, Haruo; Uemura, Isamu; Kurita, Tokutaro; and Kobayashi, Toshikazu, 4,565,994, Cl. 340-542.000.

Uemura, Masakazu: *See*—
Seki, Nakanobu; Hayashi, Yoshimasa; and Uemura, Masakazu, 4,565,162, Cl. 123-41.080.

Uemura, Yukio: *See*—
Fujita, Masahiro; and Uemura, Yukio, 4,565,112, Cl. 81-56.000.

Ueno, Hiroshi: *See—*
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, 4,565,798, Cl. 502-119.000.
Uhde GmbH: *See—*
Korner, Jorg-Peter; and Jekat, Herbert, 4,565,297, Cl. 220-254.000.
Uhen, Richard F., to General Electric Company. Dynamoelectric machine having improved lubricant slinger. 4,565,937, Cl. 310-90.000.
Uhlrich, David C.: *See—*
Mortensen, Alan C.; Miller, Bradley W.; Hickenlooper, Franklin T.; Uhlrich, David C.; Godfrey, Marl D.; Clifford, Douglas M.; James, Rex L.; Watson, Robert E.; and Keith, John C., 4,566,072, Cl. 364-520.000.
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Kawasaki, Hiroshi; and Ukiana, Kazuoki, 4,565,269, Cl. 192-70.120.
Umemoto, Makoto: *See—*
Ogawa, Akira; Aoki, Kozo; Tanabe, Osami; and Umemoto, Makoto, 4,565,777, Cl. 430-552.000.
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Naganawa, Hiroshi; Sawa, Tsutomu; Uchida, Takeshi; and Imoto, Masaya, to Microbial Chemistry Research Foundation. Serirubicum. 4,565,861, Cl. 536-6.400.
Umino, Koji: *See—*
Matsui, Hiroshi; Mihara, Tadashi; and Umino, Koji, 4,565,990, Cl. 338-171.000.
Ungar, Bracha B. Numerical guessing game. 4,565,373, Cl. 273-265.000.
Union Oil Company of California: *See—*
Backlund, Peter S., 4,565,564, Cl. 71-28.000.
Ward, John W., 4,565,621, Cl. 208-111.000.
Young, Dean A., 4,565,802, Cl. 502-214.000.
Uniset Corporation: *See—*
Berry, Brian E., 4,565,312, Cl. 227-8.000.
United Kingdom Atomic Energy Authority: *See—*
Duncombe, Edward; and Thatcher, Gordon, 4,565,667, Cl. 376-246.000.
United States Gypsum Company: *See—*
Wendt, Alan C., 4,565,041, Cl. 52-288.000.
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Agriculture: *See—*
Guss, Paul L.; Tumlinson, James H., III; Sonnet, Philip E.; and McLaughlin, John R., 4,565,695, Cl. 424-84.000.
Army: *See—*
Bossle, Paul C.; Martin, John J.; Sarver, Emory W.; and Sommer, Harold Z., 4,565,787, Cl. 436-120.000.
Comminge, Hubert; Cunningham, John E.; and White, Howard R., Jr., 4,565,412, Cl. 305-53.000.
Stern, Richard A.; and Mariani, Elio A., 4,565,982, Cl. 333-157.000.
Energy: *See—*
Crane, Thomas W., 4,565,926, Cl. 250-390.000.
Laine, Edwin F., 4,566,084, Cl. 367-49.000.
Health and Human Services: *See—*
Liotta, Lance A.; Rao, Nageswara C.; and Terranova, Victor, 4,565,789, Cl. 436-504.000.
National Aeronautics and Space Administration: *See—*
Banks, Bruce A., 4,565,618, Cl. 204-298.000.
Hergenrother, Paul M., 4,565,886, Cl. 556-436.000.
Naumann, Robert J.; and Ethridge, Edwin C., 4,565,557, Cl. 65-1.000.
Navy: *See—*
Lewis, Bernard L.; and Kretschmer, Frank F., Jr., 4,566,011, Cl. 343-17.2PC.
Singer, Irwin L.; and Jeffries, Russell A., 4,565,710, Cl. 427-35.000.
Steinberg, Richard; and Shelton, J. Paul, 4,566,013, Cl. 343-372.000.
U.S. Philips Corporation: *See—*
Beurskens, Johannes H. H.; and Winkelmolen, Wilhelmus H. F., 4,565,944, Cl. 313-318.000.
Linde, Rolf; and Klotz, Erhard, 4,566,112, Cl. 378-2.000.
Moura, Marc; Tobben, Johannes H.; and Schmotz, Ernst, 4,565,988, Cl. 336-192.000.
Needs, Howard C.; and Blok, Lodewijk, 4,565,756, Cl. 430-7.000.
Nieuwendijk, Joris A. M.; Op de Beek, Franciscus J.; Sanders, Georgius B. J.; Van Gijsel, Wilhelmus D. A. M.; and Van Nieuwland, Jacob M., 4,566,120, Cl. 381-117.000.
Shannon, John M., 4,566,020, Cl. 357-15.000.
van der Steen, Antonie C. A. M., 4,566,076, Cl. 364-757.000.
Weissensteiner, Walter, 4,566,045, Cl. 360-77.000.
U.S. Product Development Company: *See—*
Adell, Robert, 4,565,032, Cl. 49-462.000.
United States Steel Corporation: *See—*
Ball, David M.; Sumsion, Alton E.; and Taylor, Zane S., 4,565,353, Cl. 266-147.000.
United Technologies Corporation: *See—*
Skonieczny, Joseph P.; Murphy, Richard D.; and Clelford, Douglas H., 4,566,101, Cl. 371-5.000.
Zwicke, Philip E., 4,566,073, Cl. 364-551.000.
Universite d'Aix-Marseille II: *See—*
Dussoubs, Daniele; Perichaud, Alain; and Savidan, Louis, 4,565,848, Cl. 525-331.500.
University of California, The Regents of the: *See—*
Hansma, Paul K.; Moreland, John M.; and Alexander, Sam, 4,566,023, Cl. 357-26.000.
Heath, Timothy D.; Shek, Pang; and Papahadjopoulos, Demetrios, 4,565,696, Cl. 424-88.000.
University of Florida: *See—*
Abbaschian, Gholamreza J., 4,565,571, Cl. 75-0.50C.
Bergeron, Raymond J., Jr., 4,565,874, Cl. 548-239.000.
University of Notre Dame Du Lac: *See—*
Miller, Marvin J., 4,565,654, Cl. 260-239.00A.
Uno, Naoki: *See—*
Nakae, Hiroyuki; Matsuda, Toshitsugu; Uno, Naoki; Matsunami, Yukio; Hirai, Toshio; and Masumoto, Tsuyoshi, 4,565,747, Cl. 428-698.000.
UOP Inc.: *See—*
O'Hara, Mark J.; Imai, Tamotsu; Bricker, Jeffery C.; and Mackowiak, David E., 4,565,898, Cl. 585-441.000.
Upjohn Company, The: *See—*
Dolak, Lester A.; Laborde, Alice L.; Sebek, Oldrich K.; Castle, Thomas M.; and Brodasky, Thomas F., 4,565,699, Cl. 424-117.000.
Oertel, Richard W., III; Tucker, Benjamin W.; and Richter, Reinhard H., 4,565,835, Cl. 521-155.000.
Upton, Jenny, legal representative: *See—*
Errede, Louis A.; Stoesz, James D.; and Winter, George D., deceased, 4,565,663, Cl. 264-120.000.
Urakami, Toyozo: *See—*
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.
Urakami, Yoshiharu: *See—*
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Uraken Canada Limited: *See—*
Choquette, Andre, 4,565,161, Cl. 122-32.000.
Ushiyama, Hisayuki: *See—*
Nakahara, Toshiaki; Ohsaki, Ichiro; and Ushiyama, Hisayuki, 4,565,764, Cl. 430-111.000.
Usui, Minoru; and Oshima, Toshiaki, to Epson Corporation. Pitch-changeable, cam-actuated paper feed for serial printer. 4,565,461, Cl. 400-611.000.
USV Pharmaceutical Corp.: *See—*
Suh, John T.; Skiles, Jerry W.; Williams, Bruce E.; and Schwab, Alfred, 4,565,825, Cl. 514-394.000.
Vairo, Silvana. Doll with ingestion system. 4,565,536, Cl. 446-305.000.
Valdez, Henry R., to Mr. Gasket Company. Universal battery holddown. 4,565,256, Cl. 180-68.500.
Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,565,804, Cl. 514-15.000.
Valeo: *See—*
Lassiaz, Philippe, 4,565,271, Cl. 192-89.00B.
Valmet Oy: *See—*
Koski, Erkki, 4,565,155, Cl. 118-412.000.
van der Steen, Antonie C. A. M., to U.S. Philips Corporation. Method of attenuating a digital signal and device for carrying out said method. 4,566,076, Cl. 364-757.000.
Van der Veer, William R.: *See—*
Light, Glenn M.; and Van der Veer, William R., 4,565,095, Cl. 73-621.000.
van Doorn, Johannes A.: *See—*
Wife, Richard L.; van Oort, Aart B.; van Leeuwen, Petrus W. N. M.; and van Doorn, Johannes A., 4,565,892, Cl. 568-14.000.
Van Gijsel, Wilhelmus D. A. M.: *See—*
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VanHulle, Glenn J.: *See—*
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Yamamoto, Kazuhiko; and Saito, Taiichi, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Pattern reading system. 4,566,124, Cl. 382-21.000.
Yamamoto, Masaru; and Yuasa, Tsuneyoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Clutch brake mechanism for lawn mower. 4,565,268, Cl. 192-0.049.
Yamamoto, Noriaki: *See*—
Kakehi, Yutaka; Nakazato, Norio; Fukushima, Yoshimasa; Hiratsuka, Kousai; Shibata, Fumio; Yamamoto, Noriaki; and Tsubone, Tsunehiko, 4,565,601, Cl. 156-643.000.
Yamamoto, Shigehiro: *See*—
Hirooka, Shigeru; Maeda, Shuichi; Yamamoto, Shigehiro; and Yamaguchi, Toshihiko, 4,566,032, Cl. 358-103.000.
Yamamoto, Tadashi; Furuhashi, Hiroyuki; Imai, Masafumi; Ueno, Hiroshi; and Inaba, Naomi, to TOA Nenryo Kogyo Kabushiki Kaisha. Process for polymerization of olefins. 4,565,798, Cl. 502-119.000.
Yamamoto, Takemi; Kuzuya, Susumu; Kagami, Isao; and Takenaka, Yuuichi, to Brother Kogyo Kabushiki Kaisha. Paper loading apparatus for printer including plural feed paths. 4,565,462, Cl. 400-625.000.
Yamanishi, Kazuhiro; and Mineo, Mino, to Matsushita Electric Industrial Co., Ltd. Multiposition controller. 4,565,954, Cl. 318-603.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Ohata, Isao; and Sakamoto, Nobuo, 4,565,823, Cl. 514-356.000.
Yamauchi, Junnosuke: *See*—
Sato, Toshiaki; Yamauchi, Junnosuke; and Okaya, Takuji, 4,565,854, Cl. 526-214.000.
Yamazaki, Hiroaki: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,565,813, Cl. 514-222.000.
Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,565,997, Cl. 340-576.000.
Yang, Tai-Her. Liquid mixing valve with single handle. 4,565,218, Cl. 137-625.410.
Yanko, John P., to Lipe-Rollway Corporation. Friction clutch convertible for either push-type or pull-type disengagement. 4,565,270, Cl. 192-70.130.
Yanmar Diesel Engine Co. Ltd.: *See*—
Taniguchi, Hiroyuki; and Tsukahara, Hiroaki, 4,565,320, Cl. 239-90.000.
Yano, Naomichi; Ito, Hajime; and Tanaka, Shigeru, to Kubota Ltd. Heat accumulating material enclosing container and heat accumulating apparatus. 4,565,242, Cl. 165-10.000.
Yashima, Michio; Takanashi, Masami; and Komatsu, Akihiro, to Honda Kogyo Kabushiki Kaisha. Handle switch assembly for a motor vehicle. 4,565,909, Cl. 200-61.850.
Yashima, Michio: *See*—
Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, 4,565,750, Cl. 429-72.000.
Yasuda, Nobuaki: *See*—
Takeoka, Yoshikatsu; Yasuda, Nobuaki; Hori, Akio; and Ozawa, Norio, 4,565,772, Cl. 430-320.000.
Yates, David J. C.; and Baker, Rees T., to Exxon Research and Engineering Co. Production of carbon filaments. 4,565,683, Cl. 423-447.300.
Yatsurugi, Yoshifumi; and Katayama, Meiseki, to Komatsu Electronic Metals Co., Ltd. Method for the disintegration of silicon for semiconductor. 4,565,913, Cl. 219-10.55M.
Yazaki, Takashi: *See*—
Mori, Fumio; Itsubo, Junichi; Ichinose, Isao; Tanaka, Katsuake; Ishii, Osamu; and Yazaki, Takashi, 4,565,295, Cl. 215-252.000.
Yazaki, Yoshio, to Orc Manufacturing Co., Ltd. Printing apparatus. 4,565,443, Cl. 355-99.000.
Yokono, Hitoshi: *See*—
Kataoka, Fumio; Shoji, Fusaji; Obara, Isao; Takemoto, Issei; Yokono, Hitoshi; Isogai, Tokio; and Kojima, Mitsumasa, 4,565,767, Cl. 430-196.000.
Yokota, Toshikazu: *See*—
Matsutani, Kinya; and Yokota, Toshikazu, 4,565,671, Cl. 422-249.000.
Yokoyama, Naoki, to Fujitsu Limited. Semiconductor device. 4,566,021, Cl. 357-15.000.
Yoneda, Masami: *See*—
Kitaura, Tomimaro; Ohashi, Yutaka; and Yoneda, Masami, 4,566,107, Cl. 372-38.000.
Yoshida, Hajime. Standard memory take in method. 4,566,123, Cl. 382-15.000.
Yoshida Kogyo K.K.: *See*—
Kaminaga, Hiromitsu, 4,565,040, Cl. 52-235.000.
Matsubara, Susumu; Nitta, Shouetsu; Hashiba, Kiyoaki; and Noguchi, Yuuichi, 4,565,331, Cl. 242-18.0PW.
Yoshida, Kunihiko; Izumi, Eiki; and Ichiyama, Shuichi, to Hitachi, Ltd. Control valve assembly. 4,565,221, Cl. 137-885.000.
Yoshida, Minoru: *See*—
Hirose, Kunio; Hukuta, Tadatoshi; Horiuchi, Hiroshi; Urakami, Toyozo; and Yoshida, Minoru, 4,566,047, Cl. 360-85.000.
Yoshida, Ryo: *See*—
Konishi, Hiroyuki; Hino, Naganori; Matsumoto, Hiroshi; and Yoshida, Ryo, 4,565,569, Cl. 71-103.000.
Yoshida, Tomio; Satoh, Isao; Ohara, Shunji; Koishi, Kenji; and Kuroki, Yuzuru, to Matsushita Electric Industrial Co., Ltd. Optical and reversible recording and reproducing apparatus. 4,566,088, Cl. 369-44.000.
Yoshihiro, Naotsugu: *See*—
Tamura, Masao; Ohkura, Makoto; Miyao, Masanobu; Natsuaki, Nobuyoshi; Yoshihiro, Naotsugu; Tokuyama, Takashi; and Ishihara, Hiroshi, 4,565,584, Cl. 148-1.500.
Yoshin Giken Co., Ltd.: *See*—
Katoh, Hiroharu, 4,565,330, Cl. 241-236.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Nakanishi, Kenichi; Ogita, Hideo; Saito, Tadao; and Ogawa, Riichi, 4,565,306, Cl. 222-383.000.
Yoshioka, Kimitomo: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,565,813, Cl. 514-222.000.
Yoshioka, Yoshio: *See*—
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,565,865, Cl. 544-110.000.
Yoshizumi, Hajime; Amachi, Teruo; Kusumi, Takaaki; Tanaka, Takaharu; and Ishigooka, Hiroshi, to Suntory Limited. Microbial hair tonic composition. 4,565,698, Cl. 424-93.000.
Young, Dean A., to Union Oil Company of California. Silica-containing catalysts. 4,565,802, Cl. 502-214.000.
Young, James: *See*—
Hanak, Joseph J.; Nath, Prem; Izu, Masatsugu; and Young, James, 4,565,607, Cl. 204-38.100.
Young, John A., Jr. Carrier for empty containers. 4,565,401, Cl. 294-159.000.
Young, Kenneth P., to International Telephone and Telegraph Corporation. Process for preparing a slurry structured metal composition. 4,565,241, Cl. 164-499.000.
Yuasa Battery Co., Ltd.: *See*—
Isoi, Toshihiro; Yashima, Michio; and Takahashi, Shuuji, 4,565,750, Cl. 429-72.000.
Yuasa, Tsuneyoshi: *See*—
Yamamoto, Masaru; and Yuasa, Tsuneyoshi, 4,565,268, Cl. 192-0.049.
Yuhl, Edward J., Jr., to Sterling Drug Inc. Child resistant powder dispenser. 4,565,308, Cl. 222-632.000.
Yusa, Atsushi, to Olympus Optical Company Limited. Method for purifying raw material gas for use in semiconductor manufacturing and purifier for use in said method and method of manufacturing said purifier. 4,565,677, Cl. 423-219.000.
Zaccaron, Luigi. Bucket conveyor. 4,565,280, Cl. 198-509.000.
Zacharin, Alexey T. Inflatable decelerator. 4,565,341, Cl. 244-113.000.
Zahn, Christian, to Schuberth-Werk GmbH & Co. KG. Crash helmet. 4,564,959, Cl. 2-411.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; and Okuno, Yasuo, 4,565,156, Cl. 118-412.000.
Zaschke, Horst: *See*—
Demus, Dietrich; Zaschke, Horst; Vorbrodt, Hans-Matthias; Kresse, Horst; and Weissflog, Wolfgang, 4,565,881, Cl. 549-373.000.
Zehnder, Jurg, to Swiss Aluminium Ltd. Center sill, for accommodating the coupling facilities of a railroad car. 4,565,135, Cl. 105-420.000.
Zenyaku Kogyo Kabushiki Kaisha: *See*—
Takase, Muneaki; Yoshioka, Kimitomo; and Yamazaki, Hiroaki, 4,565,813, Cl. 514-222.000.
Zielke, Clyde W.; and Wu, Muh-Cheng M., to Conoco Inc. Method of reducing sulfur oxide and nitrogen oxide content of flue gas. 4,565,678, Cl. 423-235.000.
Zimmerman, Harry K.: *See*—
Studt, William L.; Zimmerman, Harry K.; and Douglas, George H., 4,565,826, Cl. 514-447.000.
Zimmermann, Peter; and Teape, John W., to Robert Bosch GmbH. Fast-acting servo drive system. 4,565,956, Cl. 318-721.000.
Zinser Textilmaschinen GmbH: *See*—
Nickolay, Helmut, 4,565,062, Cl. 57-305.000.
Zipay, Albert J.; and Gorzegno, Walter P., to Foster Wheeler Energy Corporation. Steam separating apparatus and separators used therein. 4,565,554, Cl. 55-185.000.
Zola, Meyer J.: *See*—
Ardon, Menachem T.; Kennedy, James C.; Sand, Douglas S.; Trimnell, Lawrence J.; and Zola, Meyer J., 4,566,094, Cl. 370-58.000.
Zolnowsky, John; MacGregor, Douglas B.; and Eckert, Kim, to Motorola, Inc. Data processor which can repeat the execution of instruction loops with minimal instruction fetches. 4,566,063, Cl. 364-200.000.
Zucker, Jerry. Method for purifying ink. 4,565,638, Cl. 210-774.000.
Zumfeld, Heinz: *See*—
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,565,058, Cl. 57-22.000.
Zwicke, Philip E., to United Technologies Corporation. Soft category classifier. 4,566,073, Cl. 364-551.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JANUARY, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bertin, Claude L., to International Business Machines Corporation. Resistive gate FET flip-flop storage cell. Re. 32,071, Cl. 365-182.000.

Emory, Edward P. Universal lawn spreader attachment for lawn mowers. Re. 32,067, Cl. 56-16.800.

International Business Machines Corporation: *See*—
Bertin, Claude L., Re. 32,071, Cl. 365-182.000.

Koch Process Systems, Inc.: *See*—
Ryan, James M.; and O'Brien, John V., Re. 32,068, Cl. 62-17.000.

Leveen, Harry H. Method for treating benign and malignant tumors utilizing radio frequency, electromagnetic radiation. Re. 32,066, Cl. 128-804.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Tomisawa, Norio, Re. 32,069, Cl. 84-1.010.

O'Brien, John V.: *See*—
Ryan, James M.; and O'Brien, John V., Re. 32,068, Cl. 62-17.000.

Ryan, James M.; and O'Brien, John V., to Koch Process Systems, Inc. Distillative separation employing bottom additives. Re. 32,068, Cl. 62-17.000.

Schlumberger Technology Corp.: *See*—
Vezin, Andre M., Re. 32,070, Cl. 324-347.000.

Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Device for detecting a key switch operation. Re. 32,069, Cl. 84-1.010.

Vezin, Andre M., to Schlumberger Technology Corp. Borehole apparatus for investigating subsurface earth formations including a plurality of pad members and means for regulating the bearing pressure thereof. Re. 32,070, Cl. 324-347.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Burk, John F.; and Spidel, Terry A., to General Motors Corporation. Ignition distributor. B1 4,470,385, 1-21-86, Cl. 123-146.50B.

Dalziel, Warren L., to Shugart Associates. Head positioning mechanism for recording/playback machine. B1 4,161,004, 1-21-86, Cl. 360-106.000.

General Motors Corporation: *See*—
Burk, John F.; and Spidel, Terry A., B1 4,470,385, Cl. 123-146.50B.

Hunter, Edwin J., to Toro Company, The. Sprinkler systems. B1 3,854,664, 1-21-86, Cl. 239-206.000.

Shugart Associates: *See*—
Dalziel, Warren L., B1 4,161,004, Cl. 360-106.000.

Spidel, Terry A.: *See*—
Burk, John F.; and Spidel, Terry A., B1 4,470,385, Cl. 123-146.50B.

Toro Company, The: *See*—
Hunter, Edwin J., B1 3,854,664, Cl. 239-206.000.

LIST OF DESIGN PATENTEES

Ahn, Chong T. Music box. 282,263, 1-21-86, Cl. D17-24.000.

American Hospital Supply Corporation: *See*—
McCord, Kenneth R.; Bullock, James K.; and Gille, Henrick K., 282,284, Cl. D24-53.000.

Arco Industries Ltd.: *See*—
Richards, Lawrence D., 282,266, Cl. D21-115.000.

Arco Products Corp.: *See*—
Warburg, Joseph H., 282,237, Cl. D8-71.000.

Artsana S.p.A.: *See*—
Catelli, Pietro, 282,218, Cl. D21-121.000.

Asa, Maurice. Culture spreader. 282,278, 1-21-86, Cl. D24-29.000.

AT&T Information Systems: *See*—
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., 282,257, Cl. D14-60.000.

Bakic, Dieter. Cosmetic case. 282,300, 1-21-86, Cl. D28-83.000.

Basile, Peter A., to Johnson & Johnson Dental Products Company. Amalgam dispenser. 282,276, 1-21-86, Cl. D24-10.000.

Bates, Leon H. Roof tile. 282,288, 1-21-86, Cl. D25-80.000.

Becton, Dickinson and Company: *See*—
Nitzsche, Raymond P., 282,281, Cl. D24-31.000.

Bickley, William E. Hydraulic cylinder boom. 282,304, 1-21-86, Cl. D34-36.000.

Biosafety Systems, Inc.: *See*—
Gianni, Richard F., 282,286, Cl. D24-99.000.

Black & Decker, Inc.: *See*—
Verdier, Alain, 282,289, Cl. D26-46.000.

Blatherwick, William J.: *See*—
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,279, Cl. D24-31.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,280, Cl. D24-31.000.

Bogin, Roger M.: *See*—
Serev, Peter G.; and Bogin, Roger M., 282,254, Cl. D13-35.000.

Branciforti, Vincent A. Entertainment center. 282,226, 1-21-86, Cl. D6-474.000.

Brinly-Hardy Co., Inc.: *See*—
Doering, Charles W., 282,261, Cl. D15-27.000.

British Gas Corporation: *See*—
Thomas, Richard C.; and Daniels, David J., 282,246, Cl. D10-47.000.

Brown, Wilbert C., to TIE/Communications, Inc. Base for a telephone set. 282,258, 1-21-86, Cl. D14-62.000.

Bullock, James K.: *See*—
McCord, Kenneth R.; Bullock, James K.; and Gille, Henrick K., 282,284, Cl. D24-53.000.

Burgess, Kenneth W., to E.C.K. Manufacturing Co., Ltd., The. Putter head. 282,270, 1-21-86, Cl. D21-217.000.

Buroff, Arthur N., to Spray-All, Inc. Spray gun casing. 282,274, 1-21-86, Cl. D23-18.000.

Bussell, Vanda J. Tumbler. 282,232, 1-21-86, Cl. D7-6.000.

Button Fronts Ltd.: *See*—
Valori, Peter, 282,214, Cl. D2-273.000.

Button Fronts (London) Limited: *See*—
Valori, Peter, 282,213, Cl. D2-273.000.

C & A Products, Inc.: *See*—
Serev, Peter G.; and Bogin, Roger M., 282,254, Cl. D13-35.000.

Carbajales Santa-Eulalia, Javier B.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,248, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,249, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a baby giraffe. 282,248, 1-21-86, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a baby fox. 282,249, 1-21-86, Cl. D11-158.000.

Carlson, Richard E.; and McCadden, Michael E., to Zycad Corporation. Housing for computer module. 282,260, 1-21-86, Cl. D14-114.000.

Catelli, Pietro, to Artsana S.p.A. Blackboard desk toy. 282,218, 1-21-86, Cl. D21-121.000.

Chernack, Milton P., to Extracorporeal Medical Specialties, Inc. Cardiotomy reservoir with filter. 282,282, 1-21-86, Cl. D24-51.000.

Clawson, Burrell E.: *See—*
Weigl, James; and Clawson, Burrell E., 282,283, Cl. D24-53.000.

Coyne, Patrick J., to Meritus Industries, Inc. Toy electric toothbrush holder. 282,267, 1-21-86, Cl. D21-122.000.

Coyne, Patrick J., to Meritus Industries, Inc. Toy toothpaste dispenser. 282,268, 1-21-86, Cl. D21-122.000.

Daniels, David J.: *See—*
Thomas, Richard C.; and Daniels, David J., 282,246, Cl. D10-47.000.

Doering, Charles W., to Brinly-Hardy Co., Inc. Trailing dethatcher. 282,261, 1-21-86, Cl. D15-27.000.

Doyel, John S. Sewing box. 282,216, 1-21-86, Cl. D3-20.000.

E.C.K. Manufacturing Co., Ltd., The: *See—*
Burgess, Kenneth W., 282,270, Cl. D21-217.000.

Eli, Alvin H. Conically shaped ice fishing box having an indicator mounted on a removable reel assembly. 282,272, 1-21-86, Cl. D22-22.000.

Eli, Alvin H. Ice fishing box having an indicator mounted on a removable reel assembly. 282,273, 1-21-86, Cl. D22-22.000.

Epson Corporation: *See—*
Kuroiwa, Chiaki; and Mizuno, Masahiko, 282,259, Cl. D14-109.000.
Mizuno, Masahiko, 282,256, Cl. D14-57.000.

Extracorporeal Medical Specialties, Inc.: *See—*
Chernack, Milton P., 282,282, Cl. D24-51.000.

Exxon Research and Engineering Company: *See—*
McKeagan, David J.; and Spinelli, Giuseppe, 282,287, Cl. D25-80.000.

Faris, Mark A.; Miller, John A.; and Wainwright, H. Kent, to In-Situ, Inc. Fluid level monitor. 282,247, 1-21-86, Cl. D10-101.000.

Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., to AT&T Information Systems. Telephone stand. 282,257, 1-21-86, Cl. D14-60.000.

Foreman, Ellen F. Belt buckle. 282,215, 1-21-86, Cl. D2-431.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Yamaguchi, Hiroshi; Ito, Yukinori; and Shibata, Mitsuhiko, 282,252, Cl. D13-2.000.

Genaro, Donald M.: *See—*
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., 282,257, Cl. D14-60.000.

Gianni, Richard F., to Biosafety Systems, Inc. Medical waste station with hypodermic needle cutter. 282,286, 1-21-86, Cl. D24-99.000.

Gilford, Luther G. Gasoline pump lever holder. 282,240, 1-21-86, Cl. D8-349.000.

Gille, Henrick K.: *See—*
McCord, Kenneth R.; Bullock, James K.; and Gille, Henrick K., 282,284, Cl. D24-53.000.

Gomes, Carl W., II: *See—*
Felix, Cristian J.; Genaro, Donald M.; Gomes, Carl W., II; and Sylvester, Gordon E., 282,257, Cl. D14-60.000.

Groger, Julian J.: *See—*
Reynoso, Arturo; and Groger, Julian J., 282,302, Cl. D32-32.000.

Hamilton, Leslie: *See—*
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,279, Cl. D24-31.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,280, Cl. D24-31.000.

Harvey, Franklin D. Comb. 282,291, 1-21-86, Cl. D28-21.000.

Harvey, Franklin D. Comb. 282,292, 1-21-86, Cl. D28-21.000.

Harvey, Franklin D. Combined comb and hair pick. 282,293, 1-21-86, Cl. D28-25.000.

Harvey, Franklin D. Combined comb and hair pick. 282,294, 1-21-86, Cl. D28-25.000.

Harvey, Franklin D. Comb. 282,295, 1-21-86, Cl. D28-29.000.

Harvey, Franklin D. Hair comb. 282,296, 1-21-86, Cl. D28-30.000.

Harvey, Franklin D. Comb. 282,297, 1-21-86, Cl. D28-30.000.

Harvey, Franklin D. Hair lift. 282,299, 1-21-86, Cl. D28-31.000.

Henderson, Scott R. Beverage insulator. 282,234, 1-21-86, Cl. D7-70.000.

Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., to Johnson & Johnson Dental Products Co. Hinged container with component inserts. 282,279, 1-21-86, Cl. D24-31.000.

Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., to Johnson & Johnson Dental Products Company. Hinged container with component inserts. 282,280, 1-21-86, Cl. D24-31.000.

Holloway, Thomas F., to Risdon Corporation. Cosmetic container for lipstick and the like. 282,301, 1-21-86, Cl. D28-85.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ito, Kentaro; Kuwahata, Shoichi; and Nakamura, Munehito, 282,250, Cl. D12-110.000.

Howmedica, Inc.: *See—*
Kenna, Robert V., 282,238, Cl. D8-94.000.
Kenna, Robert V., 282,277, Cl. D24-26.000.

Huldt, Johan, to Johan Huldt Design AB. Chair. 282,224, 1-21-86, Cl. D6-375.000.

Hyland, Joseph F.; Yee, Wayne J.; and Wurmnest, Louis W., to Milton Bradley International, Inc. Gameboard. 282,265, 1-21-86, Cl. D21-17.000.

Ianuzzi, Angelo J. Chair. 282,220, 1-21-86, Cl. D6-365.000.

In-Situ, Inc.: *See—*
Faris, Mark A.; Miller, John A.; and Wainwright, H. Kent, 282,247, Cl. D10-101.000.

International Business Machines Corporation: *See—*
Kusenberg, Elizabeth A., 282,305, Cl. D99-28.000.

Isham, Robert O.; and Reese, Wayne S., to TRA-TECH Corporation. Console for van conversion. 282,251, 1-21-86, Cl. D12-155.000.

Ito, Kentaro; Kuwahata, Shoichi; and Nakamura, Munehito, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 282,250, 1-21-86, Cl. D12-110.000.

Ito, Yukinori: *See—*
Yamaguchi, Hiroshi; Ito, Yukinori; and Shibata, Mitsuhiko, 282,252, Cl. D13-2.000.

Jessen, Lutz. Golf bag carrier. 282,303, 1-21-86, Cl. D34-15.000.

Johan Huldt Design AB: *See—*
Huldt, Johan, 282,224, Cl. D6-375.000.

John J. Madison Company, Inc.: *See—*
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,248, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 282,249, Cl. D11-158.000.

Johnson & Johnson Dental Products Company: *See—*
Basile, Peter A., 282,276, Cl. D24-10.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,279, Cl. D24-31.000.
Holewinski, Robert D.; Hamilton, Leslie; and Blatherwick, William J., 282,280, Cl. D24-31.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kuroiwa, Chiaki; and Mizuno, Masahiko, 282,259, Cl. D14-109.000.
Mizuno, Masahiko, 282,256, Cl. D14-57.000.

Kanamaru, Yutaka: *See—*
Shohoji, Takeshi; and Kanamaru, Yutaka, 282,236, Cl. D8-61.000.

Kelley, Thomas P. Combined food organizer and serving tray. 282,233, 1-21-86, Cl. D7-27.000.

Kenna, Robert V., to Howmedica, Inc. Rasp handle. 282,238, 1-21-86, Cl. D8-94.000.

Kenna, Robert V., to Howmedica, Inc. Guide for femoral neck osteotomy. 282,277, 1-21-86, Cl. D24-26.000.

Koyo Electronics Industries Co., Ltd.: *See—*
Shimizu, Norio; and Watanabe, Yuichi, 282,253, Cl. D13-12.000.

Kuroiwa, Chiaki; and Mizuno, Masahiko, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Computer disc drive. 282,259, 1-21-86, Cl. D14-109.000.

Kusenberg, Elizabeth A., to International Business Machines Corporation. Automatic teller machine. 282,305, 1-21-86, Cl. D99-28.000.

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774 4,565,638

CLASS 211

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CLASS 212

180 4,565,291
232 4,565,292

CLASS 215

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251 4,565,294
252 4,565,295

CLASS 219

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68 4,565,914
69 W 4,565,915
225 4,565,916
388 4,565,917
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509 4,565,919
513 4,565,920
550 4,565,921

CLASS 220

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254 4,565,297
273 4,565,298
323 4,565,299

CLASS 221

116 4,565,300

CLASS 222

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38 4,565,302
103 4,565,303
108 4,565,304
368 4,565,305
383 4,565,306
386.5 4,565,307
632 4,565,308

CLASS 223

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CLASS 225

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94 4,565,311

CLASS 227

8 4,565,312
131 4,565,313

CLASS 228

180.2 4,565,314

CLASS 229

17 R 4,565,315
23 BT 4,565,316
73 4,565,317

CLASS 235

492 4,565,922

CLASS 239

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88 4,565,319
90 4,565,320
172 4,565,321
206 B1 3,854,664
223 4,565,322
230 4,565,323
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56 4,565,327
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66 4,565,337
107.4 B 4,565,338

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481 4,565,345
558 4,565,346

CLASS 249

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122 4,565,348

CLASS 250

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352 4,565,925
390 4,565,926
560 4,565,927
578 4,565,928

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292 4,565,350

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182 4,565,645
309 4,565,646
354 4,565,647
397 4,565,648
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344 4,565,352

CLASS 260

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4,565,652
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CLASS 264

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130 4,565,664
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224 4,565,355

CLASS 267

54 R 4,565,356

CLASS 269

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CLASS 270

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CLASS 271

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663 4,565,389
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141 4,565,394
282 4,565,395

CLASS 290

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CLASS 294

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88 4,565,400
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CLASS 305

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CLASS 307

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CLASS 310

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CLASS 337

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CLASS 338

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230 4,566,082

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CLASS 376

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CLASS 377

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10 4,566,110
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57 4,566,113
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44 4,566,131

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450 4,565,457
561 4,565,458

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110 4,565,459
490 4,565,460
611 4,565,461
625 4,565,462

CLASS 401

217 4,565,463

CLASS 403

290 4,565,464
407.1 4,565,465

CLASS 404

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72 4,565,467

CLASS 405

270 4,565,468
288 4,565,469

CLASS 408

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204 4,565,471
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229 4,565,473

CLASS 409

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131 4,565,475
225 4,565,476

CLASS 412

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353 4,565,483
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114 4,565,490
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CLASS 416

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CLASS 419

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CLASS 422

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112 4,565,673
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568 4,565,518

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535 4,565,707
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50 4,565,711
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476.3 4,565,742
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638 4,565,746
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99 4,565,762
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382 4,565,774
390 4,565,775
467 4,565,776
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88 4,565,781
122 4,565,782
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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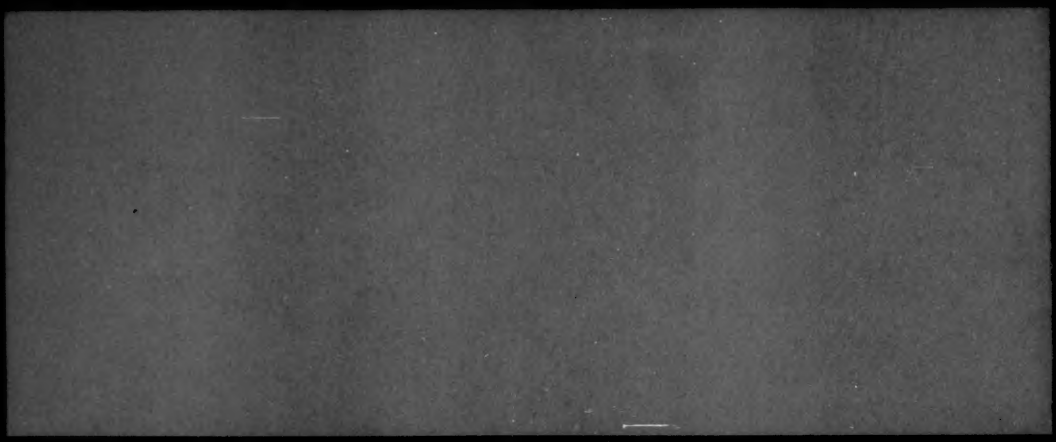

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